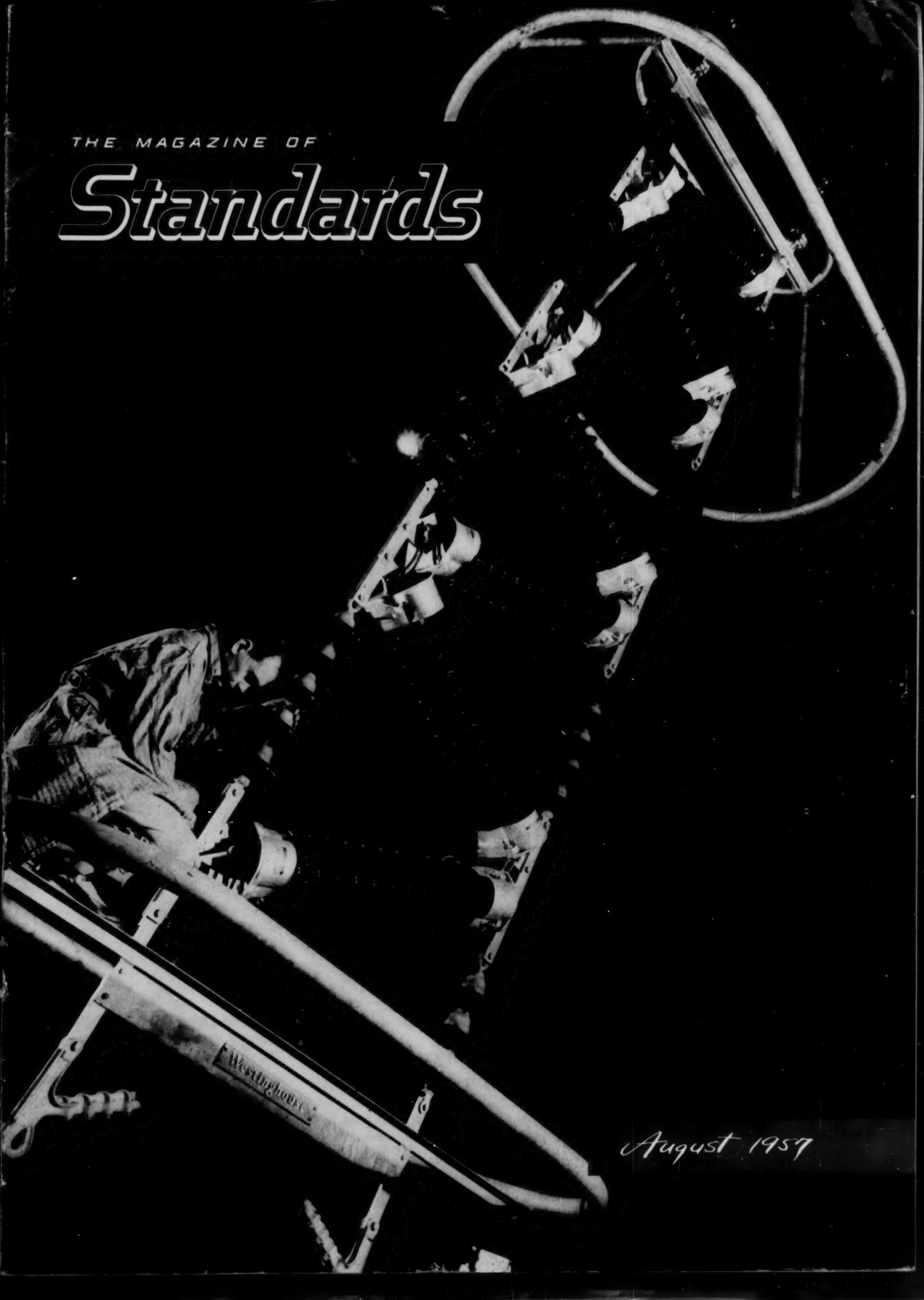
THE MAGAZINE OF

Standards



August 1957

THE MAGAZINE OF

Standards

August, 1957 Volume 28, No. 8

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MARGINAL NOTES

Highway Safety –

Safety leaders believe that as many as 2,500,000 of the nation's reported annual crop of 10,000,000 traffic accidents may be directly or indirectly caused by defective vehicles. These were the figures reported by the Association of Casualty and Surety Companies and the American Association of Motor Vehicle Administrators early this year. The two associations urged that motorists have their vehicles inspected periodically to help cut down the number of accidents.

Now, publication of the American Standard Inspection Requirements for Motor Vehicles, outlining the points that should be covered in inspecting a car, adds weight to their recommendations.

In this issue (page 239), the chairman of the committee that developed the standard tells how it can help catch defects before they cause an accident and can bring about greater uniformity in inspection requirements throughout the country.

How Much Noise?

A world-wide study that may have an important effect on radio and television standards in the future has been started by the National Bureau of Standards as part of the research being done during the International Geophysical Year. The Bureau has set up 16 radio noise recording stations throughout the world. Their purpose is to record radio signals generated by the more than 50,000 thunderstorms that occur daily on the earth. The Bureau announces that the information collected may have an important effect on man's knowledge of radio interference and propagation of radio waves through the atmosphere. During the past year, the atmospheric radio-noise recorder developed at the National Bureau of Standards has been accepted internationally as appropriate for world-wide use.

International Developments –

Last month the United States sent 24 delegates to Moscow to the meeting of the International

Electrotechnical Commission, held in the USSR for the first time. See report in the September issue.

National Conference –

Watch for the program of the National Conference on Standards in the September issue of THE MAGAZINE OF STANDARDS. The Conference is being held in San Francisco, November 13-15.

Thanks to "Fasteners" –

It was kind of the Industrial Fasteners Institute to give THE MAGAZINE OF STANDARDS permission to reprint the article "Standardization and Application of Socket Head Cap and Socket Set Screws" from their publication *Fasteners*. The article was published in our July issue (pages 200-202). For some reason, however, acknowledgement to *Fasteners* was omitted. Herewith, THE MAGAZINE OF STANDARDS expresses its appreciation for the gracious help it received from the Industrial Fasteners Institute and *Fasteners* magazine.

The Front Cover –

Westinghouse Corporation

This new 258,000-volt lightning arrester is capable of protecting an electric power system ranging up to 330,000 volts. The arrester intercepts voltage surges caused by the lightning strokes, and discharges them to the ground. The new American Standard on lightning arresters (page 236) brings standard requirements up to date.

This Month's Standards Personality

Frederick N. Clarke "has established a great record because he has fought for safety," said U. S. Senator Norris Cotton of New Hampshire recently. The occasion was a testimonial dinner for Mr Clarke marking the start of his thirty-sixth year of service with the Motor Vehicle Department of New Hampshire.

One result of Mr Clarke's "fight for safety" is the new American Standard Safety Code for Inspection of Motor Vehicles (see page 239). Mr Clarke was chairman of the committee that developed the standard.

Testifying to the esteem in which Mr Clarke is held, the testimonial party has been described as one of the biggest ever given a State official. Mr Clarke received a $2,000, 16-foot, electrically driven outboard motor runabout in appreciation for his services. He also received a gavel made from wood that was once part of the decorations in the U. S. Senate chamber, sent by New Hampshire's Senator Styles Bridges.

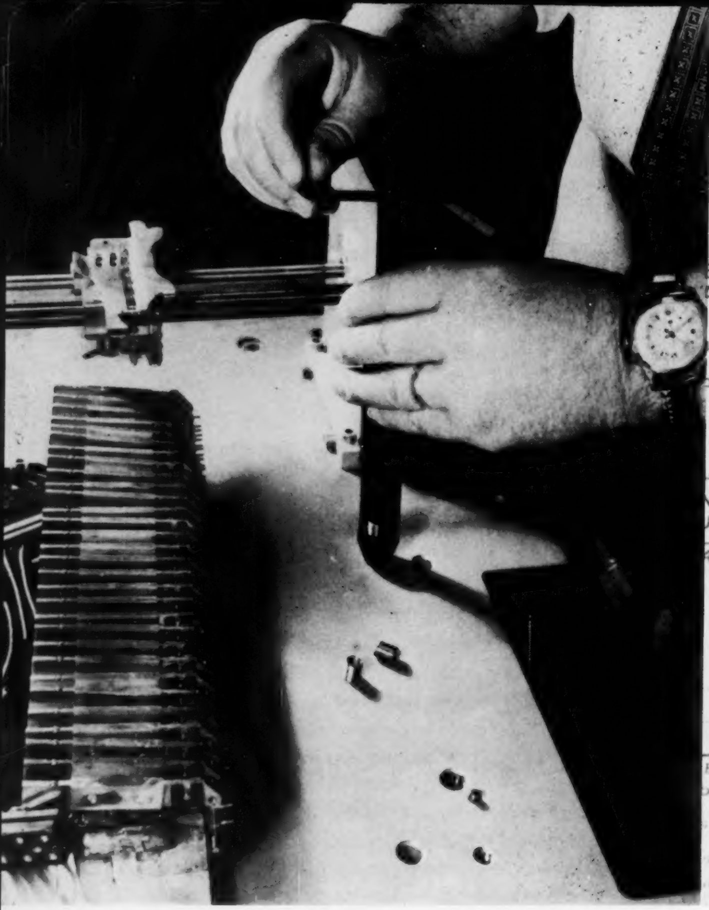
It is a tribute to his native ability and New England force of character that Mr Clarke has reached this national prominence and recognition. Because of family difficulties, he was not able to finish high school. Oddly enough, his start in the transportation field came when he purchased a motorcycle to travel from his home in Charlestown, New Hampshire, to Springfield, New Hampshire, where he worked as a machinist. This experience paid off in 1922 when Olin H. Chase, then the State's Commissioner of Motor Vehicles, offered him a job as motorcycle patrolman and assigned him the district including Charlestown and Springfield. Although traffic was not too heavy in 1922, roads were not good, either, and Mr Clarke recalls that sand and gravel and slippery tar surfaces made motorcycle travel difficult. He learned a great deal about the art of protecting the public during these years of road patrol, however. One of the occasions that stands out in his mind is the New Hampshire flood of 1927 and long, grueling hours spent in helping flood victims and directing traffic around washed out bridges and roads.

Mr Clarke's rise began with his promotion to district officer of the patrol section. In 1943, he was appointed Road Toll (Gas Tax) Administrator; and in 1947 he was appointed Commissioner. He has just been reappointed for a third five-year term.

Mr Clarke's long and close experience with the driving public convinced him that active measures were needed to improve highway safety. As Commissioner he has been the prime mover in a developing traffic safety program for New Hampshire that has brought many awards and citations from the White House Safety Conference, the National Safety Council, the American Automobile Association, and the Automobile Legal Association. He has also helped work out reciprocal arrangements with Canada for improving traffic safety.

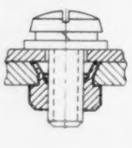
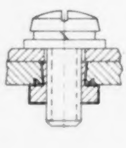
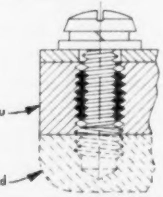
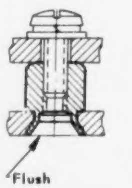
Mr Clarke has twice served as president of the Eastern Conference of Motor Vehicle Administrators, and is past Regional Governor of the North American Gasoline Tax Conference. He is vice-president of the American Association of Motor Vehicle Administrators. His work as chairman of the Sectional Committee on the motor vehicle inspection code was an important factor in effectively bringing the new standard to completion.

In addition to highway safety, Mr Clarke's primary interest is in his three children and six grandchildren.



Left, *1/4-28 inserts are being installed in holes that fasten supports for typer character to base plate as reinforcement to prevent thread wear and stripping.*

Figure 1. *Raytheon standard on threaded inserts is typical of company's approach on all components*

INSERT TYPE	FLARED SHANK	SELF-CLINCHING	WIRE-THREAD	FLARED SHANK SPACING
TITLE AND NUMBER	 INSERT YB364-1001	 INSERT, SELF-CLINCHING YA364-1002	 Thru Blind INSERT, THREAD YA364-1011	 Flush INSERT, SPACING YA364-1015
FUNCTION	TO PROVIDE THREADS IN THIN SHEETS AND SOFT MATERIALS, FOR FREQUENT DISASSEMBLY, OR WHERE SEPARATE NUTS MAY NOT BE ASSEMBLED READILY		TO PROVIDE FOR FREQUENT DISASSEMBLY IN ALUMINUM ALLOY AND MAGNESIUM ALLOY PLATES AND CASTINGS	TO PROVIDE A FLUSH-CAPTIVATED SPACER
APPLICATION	IN GOVERNMENT EQUIPMENTS AND WHERE STAINLESS STEEL INSERTS ARE REQUIRED	IN COMMERCIAL EQUIPMENTS WHERE PROPERTIES OF STAINLESS STEEL IN INSERTS ARE NOT REQUIRED	GOVERNMENT AND COMMERCIAL EQUIPMENTS	
THREAD SIZES	4-40 THRU ¼-20	4-40 THRU 10-24	6-32 THRU ½-13	6-32 ONLY
MATERIAL AND THICKNESS IN WHICH INSERT MAY BE ASSEMBLED	METALS AND PLASTICS .048 THRU .250	METALS ONLY .040 THRU .125	ALUMINUM ALLOYS AND MAGNESIUM ALLOYS ONLY SEE FIG. 4 FOR THICKNESS.	METALS AND PLASTICS .048 THRU .188
INSERT MATERIAL AND FINISH	302 STAINLESS STEEL, PASSIVATED	HEAT-TREATED CARBON STEEL, CADMIUM PLATED	18-8 STAINLESS STEEL PER AMS 7245A	302 STAINLESS STEEL, PASSIVATED

Comparing costs before and after standardization, company finds substantial savings through use of standards. Extra bonus is time saved in training engineers and increased versatility of company personnel.

Why Standardization at Raytheon?

by **H. B. Macomber**
Raytheon Manufacturing Company
Wayland Laboratory
Wayland, Mass.

THE dollar savings in reduced paper work and handling brought about by our standardization program totals $25,300 per month based on 2275 items carried in Engineering Stock Stores alone. Items in this stock are usually carried in relatively small numbers and are issued directly by engineering to the using department. This figure has been accurately computed because we have been able to compare our costs of paper work and handling on these 2275 items before and after standardization.

In addition, the production department has a larger stock of common standard items which are issued directly to the shop. The savings attributable to standardization on these items have not been computed as yet.

Many of the benefits of standardization are obvious. By buying fewer items in larger quantities, we obtain a lower price. Standard parts are always in stock. One or more sources of supply are assured. The amount of clerical work is reduced. Requisitions, orders, receiving reports, and stock reports are fewer and for larger quantities. Physical handling of the parts and inventory control are simplified.

Drafting time is reduced, especially by highly-paid creative engineers. The layout specifies a standard part by number, instead of being detailed.

Time is saved in the shop by working to standard manufacturing instructions which need not be detailed on the drawing. Standardization means greater familiarity and experience with a smaller number of items.

We have obtained many other specific benefits of standardization to which a precise dollar value cannot be assigned. Many of the items covered by standardization are common articles of industry such as threaded hardware. Before standardization, each design engineer in each of our divisions selected, according to his own experience, from 24,000 varieties of similar items. Each man had his own preferences, often born of habit. Under our present standardization program, for example, the number of varieties of screws, nuts, and flat- and lock-washers was reduced to 315. The task of selecting common threaded parts is simplified. The engineers' talents are devoted to solving more complex problems on a higher, more creative level.

We have found that standards are a valuable training aid. The new engineer soon becomes familiar with the proper use of components in a wide variety of applications common to Raytheon products. His training period is shortened. In our company, personnel may be shifted from section to section as the work load varies. With standards, a man can perform effectively and quickly in more than one section because all sections use the same standards. Our staff is made more versatile.

Not only does the design and engineering department benefit; purchasing, stores, the tool room, manufacturing, and even our suppliers are able to work more efficiently because of greater familiarity with fewer standard items.

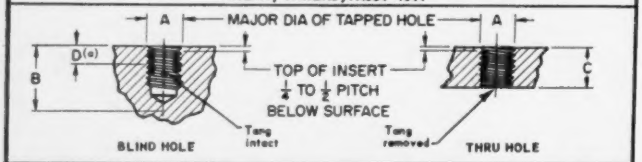
Costs of manufacture and assembly are often reduced through the use of special power tools and jigs. But quantity production is required to warrant investing in the tool. With standards, it is possible to achieve the level of use indicated to buy or make the tool.

Standards are developed as a group effort. Suggestions to include a part in the standards manuals may come from production, purchasing, and inspection as well as from design engineering.

The development of the Raytheon standard on threaded inserts in *Figure 1* is typical of our approach for all components.

Standards are established according to a few general rules. Frequency of use is a major consideration.

INSERT, THREAD,YA364-1011

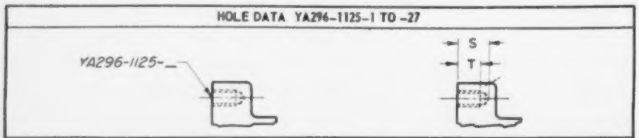


INSERT SELECTION			HOLE DATA				
THD SIZE NC-2	PART NO.	MIN NO. OF THD	A MAX	MIN MATL THICKNESS BLIND HOLE B	MIN MATL THICKNESS THRU HOLE C	D*	HOLE IDENTIFICATION
6-32	1	7	.180	.515	.281	13/64	YA296-1125-1
8-32	2	8 1/2	.206	.577	.328	7/32	-2
10-24	3	7 1/4	.245	.671	.375	17/64	-3
1/4-20	4	8	.316	.874	.500	11/32	-4
5/16-18	5	9 1/4	.385	1.061	.625	27/64	-5
3/8-16	6	10	.457	1.233	.750	1/2	-6
1/2-13	7	11	.600	1.593	1.000	21/32	-7

Figure 2. *Hole identification number shown here is one of details on finished drawing*

Figure 3. *Machinist checks Manufacturing Standard Sheet for data he needs on hole to be drilled*

HOLE DATA YA296-1125-1 TO -27



HOLE IDENTIFICATION (FROM DWG)	SCREW SIZE (NC-2)	DRILLED HOLE SIZE MIN	DRILLED HOLE SIZE MAX	$S^{+1/64}_{-0}$ BLIND HOLE DEPTH INC POINT	HELI-COIL TAP NUMBER ROUGHING (OPTIONAL)	HELI-COIL TAP NUMBER FINISHING	MIN DEPTH OF FULL THREAD	T (REF) PLUG TAP DEPTH INC 3 1/2 THD CHAMFER	HELI-COIL THREAD PLUG GAGE (CLASS 2)
YA296-1125-1	6-32	.144	.150	19/64	—	06CPB	9/32	25/64	788-06
-2	8-32	.170	.176	23/64	—	2CPB	21/64	7/16	-2
-3	10-24	.199	.205	29/64	—	3CPB	3/8	17/32	-3
-4	1/4-20	.261	.267	13/16	—	4CPB	1/2	43/64	-4
		.328	.334	31/32	—	5CPB	5/8	53/64	-5
				1	—	6CPB	3/4	31/32	-6
-20						8CPB	1"	1 17/64	-8
-21	7/16-14	.453	.463						
-22				1 21/64			9/64	1/4	-06
-23	1/2-13	.515	.525	1"	8CRU	8CPB			
-24				1 1/8			3/4	1 ?/64	
-25	9/16-12	.578	.588	1 7/64	9CRU	9CPB	9/16	53/64	-9
-26				1 41/64			27/32	1 9/64	
-27				1 53/64			1 1/8	1 33/64	

If an item is seldom used by Raytheon, it is uneconomical to incur the expense of drawing up standard sheets. Existence of many different items having the same function is another criterion. The field of fasteners, for instance, is a rewarding one for standardization because there are so many types that accomplish the same end result.

We use many parts and assemblies made of aluminum. Aluminum, while light, is relatively soft. Threads tapped in aluminum are likely to wear, strip, and become damaged, especially when the part is frequently disassembled for maintenance and inspection. Many government and commercial specifications require that threads in aluminum be protected by inserts. For protecting through holes and blind holes in aluminum plates and castings ranging in thickness from 0.281 to 1.593 in., we selected stainless steel wire thread inserts made by the Heli-Coil Corporation of Danbury, Conn. We first made certain the Heli-Coil insert satisfied the common military and commercial specifications.

Heli-Coil makes 47 different sizes and types of inserts in stainless steel, phosphor-bronze, and other materials. By group discussion and a survey of the most frequently used thread sizes and types, we standardized on stainless steel wire thread inserts in six sizes in the National Coarse series.

A design engineer working on a problem involving an aluminum casting or plate in which threads are required will refer to the page (*Figure 1*) in "Preferred Practices — Design and Drafting" for the appropriate insert for thread protection. The engineer's experience will often prompt him to design a part with insert thread protection even though not specified. He obtains the drawing number from the first page in the series of four referring to inserts and additional pages from which he can obtain dimensions for the insert of the size he has selected. On his layout, which then goes to the drafting department, he notes the drawing number, the part number, and the manufacturing and inspection standard. All other aspects of drafting, manufacturing, and inspection are accomplished through applicable standards.

When the draftsman receives the layout, he follows the instructions given. One of the details given in the finished drawing is the manufacturing hole identification number (*Figure 2*).

When the drawing is received in manufacturing, the machinist turns to the Manufacturing Standard Sheet (*Figure 3*) on inserts, which tells him the size and depth of the hole that must be drilled, the number of the Heli-Coil tap (roughing and finishing), plug gage number, the number of the correct inserting tool and tang break-off tool, if required.

The inserts themselves are drawn from Stores according to part numbers shown on the drawing. The stock is maintained on a maximum-minimum basis. The purchasing department reorders standard parts in large quantities to assure availability at all times.

DIMENSIONING PRACTICES

for the Control and Form Tolerancing of Geometric Surfaces

by **P. G. Belitsos**

THE most complex and difficult area in dimensioning practice is that which deals with the control and form tolerancing of geometric surfaces. This is obvious to any standards engineer whose work brings him in daily contact with design and manufacturing engineers as well as inspection and quality control personnel.

The new American Standard on Dimensioning will certainly make significant contributions in eliminating many of the recurring problems that plague Engineering, Manufacturing, and Inspection and which originate with the drawing. It must be understood that in the complex area of geometric tolerancing, the American Standard has merely established the broad and basic principles in terms of available knowledge and experience. However, the discussions and investigations in this field that have been stimulated by the work of ASA and several of its member technical societies should have far-reaching effects on interchangeable manufacture and mass production. There are literally hundreds of companies that are now establishing improved local engineering standards using these principles.

Mr Belitsos is Supervisor of Standards Engineering, Jet Engine Department, General Electric Company, and is a member both of ASA Sectional Committee Y14 on Drawings and Drafting Practice and of the Y14 Subcommittee 5 on Dimensioning. He is also chairman of the Aeronautical-Automotive Drawing Standards Committee of the Society of Automotive Engineers. He is a member of the SAE and of the Standards Engineers Society, and is author of a number of articles most recent of which is "SAE Aeronautic and Ground Vehicle Drafting," SAE Journal, *1956. He presented papers on advanced principles in dimensioning of engineering drawings before the American Society for Engineering Education, June, 1956; before the University of Wisconsin Drafting Practices Institute, November, 1956; and at a meeting of the Montreal, Canada, section of the Standards Engineers Society, February, 1957.*

Mr Belitsos will be one of the ASA delegates to the ABC conference on unification of drafting practices at Toronto, Canada, October 8, 9, and 10.

Already several advances have been made which will, no doubt, be reflected in future revisions of the American Standard. The interest in this subject throughout industry is amazing. It is by no means confined to engineering in the drafting and design departments, but is particularly evident in manufacturing and inspection.

To provide you with a broad understanding of the principles established in the new American Standard on Dimensioning, we will start with the form tolerancing of both simple and complicated contours.

If you have ever tried to design "Go" and "No Go" profile gages for various types of contours, you can appreciate the difficulties involved in contour tolerancing. *Figure 1* illustrates a simple contour consisting of a combination of flat and curved sections. You will note that the centers for the radii are located by rectangular coordinates, the radii are individually toleranced, and the angular flats are also individually toleranced. The maximum and minimum contours are determined by the proper combination of the high and low limits of the toleranced dimensions. This is a time-consuming process and it is surprising to see the resulting contours which inevitably have a zone tolerance of non-uniform width.

The much superior method recommended by the American Standard and illustrated in *Figure 2* is based on two simple principles:

(1) The theoretically true contour is established by

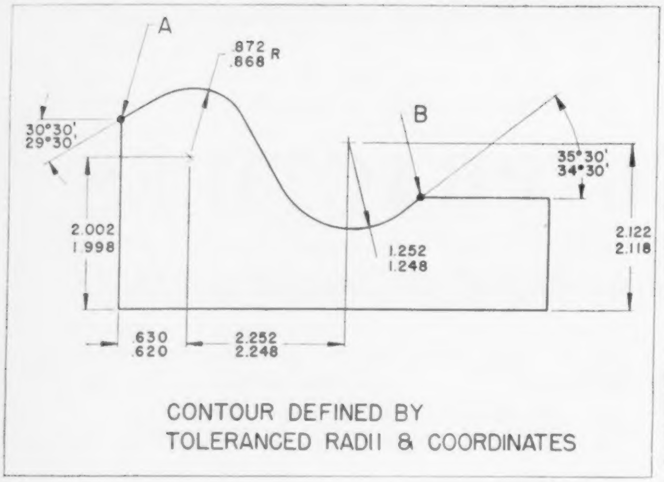
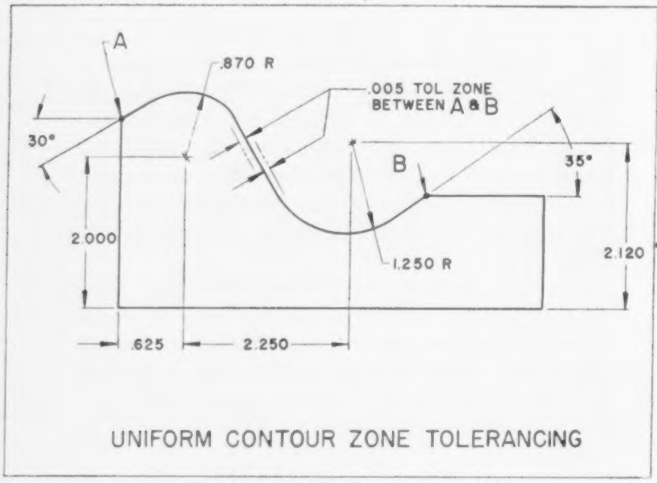
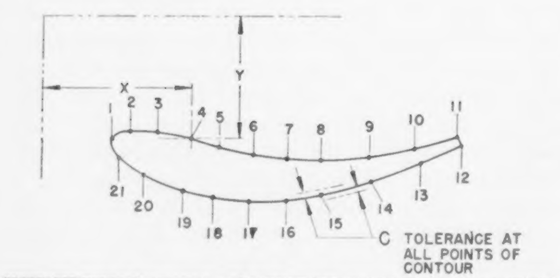


Figure 1





STATION	21-2	2-3	3-9	9-10	10-13	13-14	14-20	20-31
C	.003	BLEND	.002	BLEND	.003	BLEND	.002	BLEND

AIRFOIL CONTOUR TOLERANCING

Figure 2

Figure 3

the use of basic untoleranced dimensions, which may be any combination of rectangular coordinates, angles, or radii, etc.

(2) A uniform contour tolerance zone is specified by delineating the tolerance zone at some conspicuous place along the contour.

This tolerance zone can be shown symmetrically disposed on either side of the true contour or it may be applied entirely plus or entirely minus. If required, the extent of this uniform tolerance zone can be specified, as shown, in note form.

These principles can be applied to the contours of cams, airfoil contours, turbine blade dovetails, compressor casing contours, etc. *Figure 3* shows their application to a turbine blade airfoil contour. Note that in this figure the true shape of the airfoil contour is established by a series of points located by rectangular coordinates. Since the contour zone tolerance does not have the same value throughout the airfoil, a table is used to show the variable tolerance and the extent of application of each value.

To illustrate one further principle, supposing we define a rigid metal tube having multiple bends in several planes by a series of straight lengths, bend angles, and twist angles expressed as basic untoleranced dimensions.

This paper was prepared as part of a panel discussion on the new standard on dimensioning being completed as Section 5 of the revised American Standard Drafting Manual, Y14. It was presented May 28, 1957 at one of the workshops during the Spring Meeting of the Company Member Conference of the American Standards Association, Hartford, Connecticut.

Section 5 on Dimensioning and Notes, the principles of which are discussed in this article by Mr Belitsos, is one of a group of four sections of a proposed revision of the American Standard Drafting Manual that are near completion and, it is planned, it will be submitted to the American Standards Association for approval very soon. In addition to the fact that Section 5 is perhaps of greatest interest to American industry, it will serve as the basic American document at the ABC conference on unification of drafting practices scheduled for October 8, 9, and 10 at Toronto, Canada. Joint conferences between representatives of the Y14 committee and of the Department of Defense have indicated a substantial agreement on the practices set forth in Section 5. The ASA delegation to the ABC conference will include both military and industrial representation. The delegation is now engaged in comparative studies of the American, British, and Canadian documents and in the preparation of papers substantiating the American practices where they differ and setting forth the accord reached to date.

Delegates to the ABC meeting at Toronto will be:

P. G. Belitsos, Supervisor of Standards Engineering, Jet

See *Figure 4*. As in the previous illustration this establishes the true shape of the tube, and a contour tolerance specifies the allowable variation from true shape. However, in this case, the outside diameter of the tube has a size tolerance. A tool engineer designing a gage for the tube might well ask the following question. Does the contour tolerance apply to the maximum outside diameter (O.D.), the minimum O.D., or does it apply regardless of what size the O.D. actually measures providing that it is within its specified size limits? This can be clarified by the addition of a simple phrase, and the contour tolerance now reads: THIS TOLERANCE APPLIES AT ALL POINTS ON MAXIMUM EXTERNAL SURFACE OF TUBE CONTOUR. This introduces a new principle in geometric tolerancing which we will discuss further later.

A great deal of time was spent by the ASA Y14 subcommittee on Dimensioning in developing the standard expressions and interpretations for geometric form requirements involving concentricity, squareness, roundness, alignment, parallelism, angularity, etc.

It was first necessary to determine what form control was expected when the sizes of the features of a component were given without any specified tolerances of form. The principle was established that when tol-

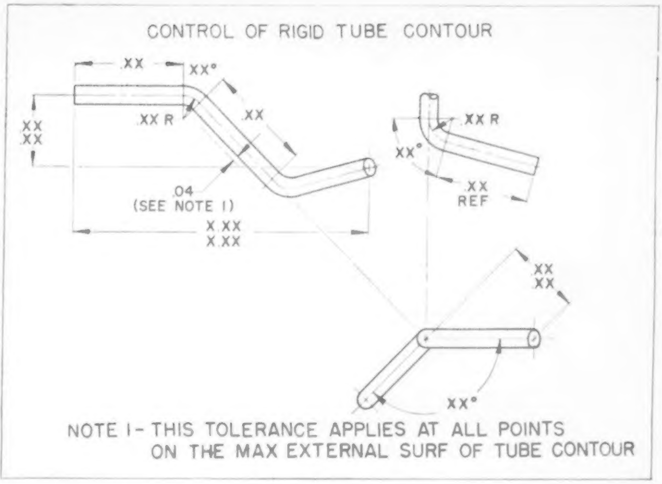


Figure 4

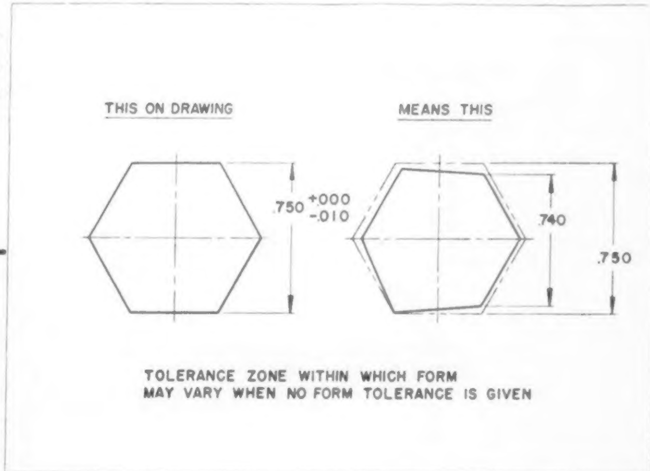


Figure 5

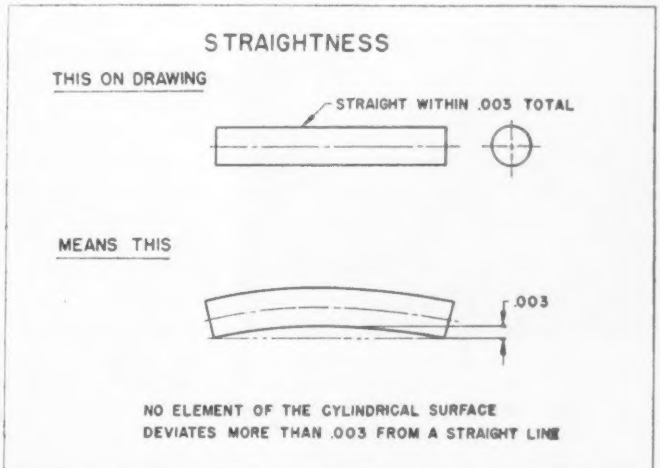


Figure 6

Engine Department, General Electric Company, Cincinnati, Ohio.

N. E. Brown, Comptroller, Electronic Mechanics, Clifton, N. J.

C. H. Heller, Standards Development, Bell Telephone Laboratories, New York, N. Y.

R. P. Hoelscher, College of Engineering, University of Illinois, Urbana, Ill.; Chairman, Sectional Committee Y14, Drawings and Drafting Practice.

R. S. Paffenbarger, Professor, Department of Engineering Drawing, Ohio State University, Columbus, Ohio.

R. P. Trowbridge, Director, Engineering Standards, General Motors Corporation, Detroit, Mich.

S. H. Watson, Corporate Standardizing Division, Radio Corporation of America, Camden, N. J.

Joe Stannard, Engineering Department, Pratt & Whitney Aircraft Division, United Aircraft Corporation, East Hartford, Conn.

Craig Telfer, Camera Works, Eastman Kodak Company, Rochester, N. Y.

E. H. Jones, Chief Engineer, Henry Valve Company, Inc, Melrose Park, Ill.

C. H. Springer, Department of General Engineering Drawing, University of Illinois, Urbana, Ill.

Frank Philippbar, American Society of Mechanical Engineers.

C. E. Hilton, American Standards Association.

Personnel are still to be designated by the Department of Defense.

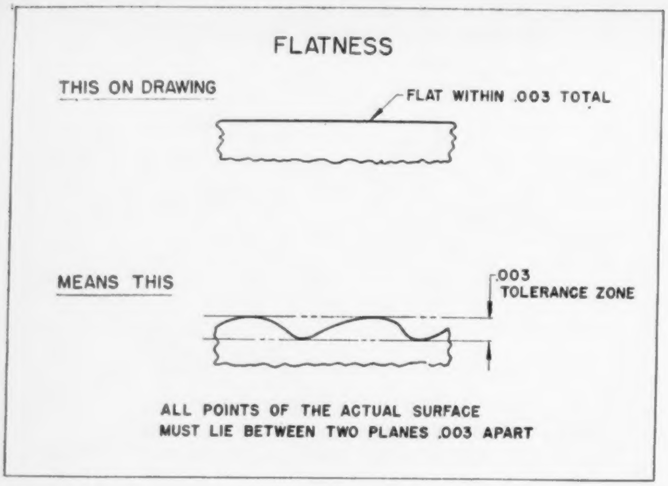


Figure 7

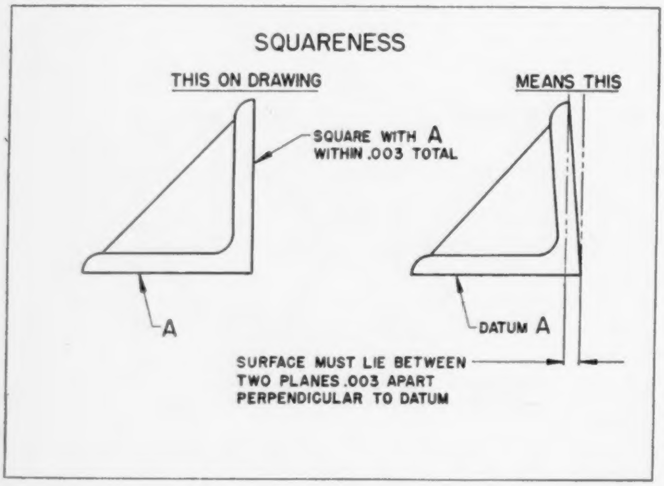


Figure 8

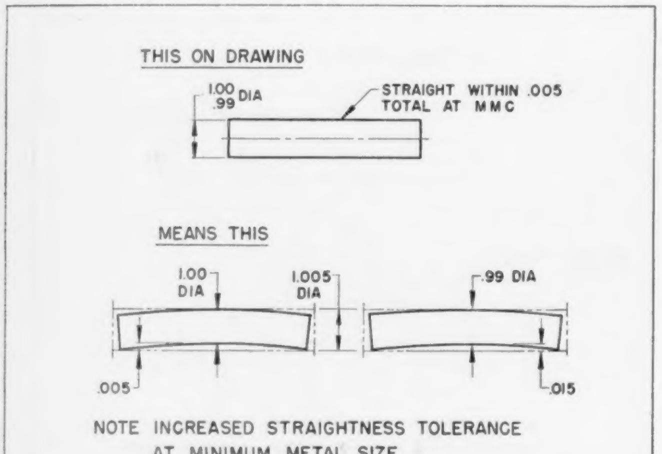


Figure 9

erances of form are not specified it is interpreted that errors of form are permitted providing they are within the specified limits of size and do not cross the profile established by the maximum material condition. *Figure 5* illustrates the meaning of this principle applied to a hexagonal shape. Note that if the hexagon is at its maximum material condition of size, it should be perfect in form. However, as its size approaches or falls at minimum its geometric form can vary from a true hexagon.

The American Standard presents a series of illustrations showing the method of specifying and interpreting the various geometric relationships that must be accurately maintained in order that parts may assemble and function properly. Every effort was concentrated in developing tolerance expressions that would be clear and easy to understand. In all cases the tolerance expressions establish the total tolerance zone within which the geometric variation for the applicable surface must be held. This, of course, means the entire surface and not merely a point or a line on the surface. Where the design requires that the rate of change in the surface has to be controlled, this can be done by specifying the tolerance as applying in inches per inch of length, etc. Whenever possible the interpretations which are included in the standard are based on actual surfaces rather than on imaginary centerlines or planes. For example, in *Figure 6* the straightness tolerance requires that no element of the cylindrical surface can deviate from a straight line by more than the specified .003 tolerance.

In addition it was established that unless otherwise specified, the specified geometric tolerance applies regardless of the feature size. Therefore, where geometric tolerances are expressed as shown in *Figure 6* and the next two *Figures 7 and 8* which are from the American Standard they are to be observed regardless of the actual finished sizes of the features concerned.

The American Standard recognizes that there are some designs in which the amount of the specified geometric tolerance can be allowed to increase according to the finished size of the features. This additional tolerance can be permitted only in those designs where it is consistent with functional requirements. The method of specifying this on the drawing is shown in *Figure 9*. Note that the notation "AT MMC" is added to the standard note for straightness. This indicates that the specified tolerance applies only at the Maximum Material Condition (MMC). The use of the term "Maximum Material Condition" or its abbreviation MMC on drawings is new and will require extensive explanations to be understood by engineering personnel and the many users of the drawing. When used in a drawing note, it means that the specified tolerance applies at that limit of size at which the part contains the maximum amount of material. This, of course, would be the maximum limit for an external feature such as the maximum diameter of a mating flange, or the minimum limit of an internal feature such as the mini-

mum diameter of a hole. By controlling the maximum material condition of size of mating parts, the designer exercises the necessary control over the tightest condition of assembly.

In this figure the pin at maximum diameter is shown in a gage where the effective straightness is limited to the specified tolerance of .005. The pin at minimum diameter is shown in the same gage and may have as much as .015 error in straightness and still be accepted.

These same principles are shown in *Figure 10* where they are applied to a requirement for squareness to a datum surface.

Time has permitted only a very brief outline of the principles involved in the specification and interpretation of tolerances of form. The application of these principles to actual components in design engineering involve problems that bristle with complexity. This is becoming more and more evident with the ever increasing requirements of mass production, interchangeability, and performance, particularly with high speed rotating parts. Individual companies through their standards engineering work are meeting and resolving these problems by the application of the principles outlined in this new American Standard. Geometric and positional dimensioning and tolerancing is an area in standards activity in which we are only now coming of age.

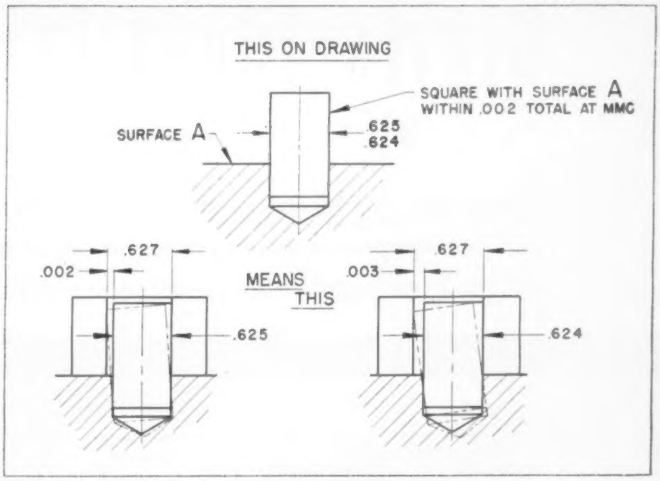


Figure 10

It is expected that experience will show further improved methods of stating these requirements. This American Standard in order to be useful should be maintained as an active project in order to keep abreast of the many advances being made, and in so doing contribute to the good of the national economy and defense.

Reeves Bros Honored For Use of Textile Standards

• Use of the L22 American Standards, which establish performance requirements for rayon, acetate, and mixed fabrics, has brought Reeves Bros the suppliers' merit award of the National Association of Shirt, Pajama, and Sportswear Manufacturers. The award was presented "for outstanding accomplishment and textile leadership in end use standards." Seymour A. Marrow, Harwood Manufacturing Corporation, president of the Association, in making the presentation, cited the company as the "first to pioneer in end-use standards and to publicly announce its adherence to consumer objectives in fabric performance." "As this quality takes on increasing importance with the years, their initiation of this program and constant laboratory and merchandising developments take on added significance," he said.

John M. Reeves, chairman of the board of Reeves Bros, in accepting the award, stated that the firm's adoption two years ago of the L22 standards has resulted in the "total absence of customers' complaints or returns." He expects that the L22 standards, developed for rayon-acetate fabrics, will be extended to cover fabrics of all fibers, including cottons.

He reported that some retail leaders are beginning to adopt the L22 standards but in his opinion the real impetus to the standards movement in the textile field will not get under way until all major retailers adopt them.

John M. Reeves, *center, receives award from Seymour A. Marrow, Harwood Manufacturing Corp, president of the National Association of Shirt, Pajama, and Sportswear Manufacturers. M. J. Lovell, the Association's secretary-counsel, looks on (right).*

Digits Identify Aluminum Alloys

Aluminum Association's standard system of numbers identifying wrought aluminum alloys wins approval as American Standard because of acceptability to users as well as producers. Foreseeing future growth, the system leaves one series open for addition of new alloys.

AMER STD DESIGNATION	SILICON	IRON	COPPER	MAN-GANESE	MAG-NESIUM	CHROM-IUM	NICKEL	ZINC	TITAN-IUM	OTHERS		ALUMINUM Min.(12)
										Each	Total	
EC(2)	......	......	......	......	......	......	......	......	......	......	......	99.45
1060	0.25	0.35	0.05	0.03	0.03	......	......	0.05	0.03	0.03	0.15	99.60
1100	1.0 Si + Fe		0.20	0.05	......	......	......	0.10	......	0.05	0.15	99.00
1130(3)	0.7 Si + Fe		0.20	......	......	......	......	......	......	0.05	0.15	99.30
1175(4)	0.15 Si + Fe		0.10	......	......	......	......	......	......	0.02	......	99.75
1230(5)	0.7 Si + Fe		0.10	0.05	......	......	......	0.10	......	0.05	0.15	99.30
2011(6)	0.40	0.7	5.0-6.0	......	......	......	......	0.30	......	0.05	0.15	Remainder
2014	0.50-1.2	1.0	3.9-5.0	0.40-1.2	0.20-0.8	0.10	......	0.25	0.15	0.05	0.15	Remainder
2017	0.8	1.0	3.5-4.5	0.40-1.0	0.20-0.8	0.10	......	0.25	......	0.05	0.15	Remainder
2018	0.9	1.0	3.5-4.5	0.20	0.45-0.9	0.10	1.7-2.3	0.25	......	0.05	0.15	Remainder
2024	0.50	0.50	3.8-4.9	0.30-0.9	1.2-1.8	0.10	......	0.25	......	0.05	0.15	Remainder
2025	0.50-1.2	1.0	3.9-5.0	0.40-1.2	0.05	0.10	......	0.25	0.15	0.05	0.15	Remainder
2117	0.8	1.0	2.2-3.0	0.20	0.20-0.50	0.10	......	0.25	......	0.05	0.15	Remainder
2218	0.9	1.0	3.5-4.5	0.20	1.2-1.8	0.10	1.7-2.3	0.25	......	0.05	0.15	Remainder
2618	0.25	0.9-1.3	1.9-2.7	......	1.3-1.8	......	0.9-1.2	......	0.04-0.10	0.05	0.15	Remainder
3003	0.6	0.7	0.20	1.0-1.5	......	......	......	0.10	......	0.05	0.15	Remainder
3004	0.30	0.7	0.25	1.0-1.5	0.8-1.3	......	......	0.25	......	0.05	0.15	Remainder
4032	11.0-13.5	1.0	0.50-1.3	......	0.8-1.3	0.10	0.50-1.3	0.25	......	0.05	0.15	Remainder
4043	4.5-6.0	0.8	0.30	0.05	0.05	......	......	0.10	0.20	0.05	0.15	Remainder
4343(11)	6.8-8.2	0.8	0.25	0.10	......	......	......	0.20	......	0.05	0.15	Remainder
5005	0.40	0.7	0.20	0.20	0.50-1.1	0.10	......	0.25	......	0.05	0.15	Remainder
5050	0.40	0.7	0.20	0.10	1.0-1.8	0.10	......	0.25	......	0.05	0.15	Remainder
5052	0.45 Si + Fe		0.10	0.10	2.2-2.8	0.15-0.35	......	0.10	......	0.05	0.15	Remainder
5056	0.30	0.40	0.10	0.05-0.20	4.5-5.6	0.05-0.20	......	0.10	......	0.05	0.15	Remainder
5086	0.40	0.50	0.10	0.20-0.7	3.5-4.5	0.25	......	0.25	......	0.05	0.15	Remainder
5154	0.45 Si + Fe		0.10	0.10	3.1-3.9	0.15-0.35	......	0.20	0.20	0.05	0.15	Remainder
5357	0.12	0.17	0.07	0.15-0.45	0.8-1.2	......	......	......	......	0.05	0.15	Remainder
6003(7)	0.35-1.0	0.6	0.10	0.8	0.8-1.5	0.35	......	0.20	0.10	0.05	0.15	Remainder
6053	(8)	0.35	0.10	......	1.1-1.4	0.15-0.35	......	0.10	......	0.05	0.15	Remainder
6061	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.15-0.35	......	0.25	0.15	0.05	0.15	Remainder
6062	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.14	......	0.25	0.15	0.05	0.15	Remainder
6063	0.20-0.6	0.35	0.10	0.10	0.45-0.9	0.10	......	0.10	0.10	0.05	0.15	Remainder
6066	0.9-1.8	0.50	0.7-1.2	0.6-1.1	0.8-1.4	0.40	......	......	0.20	0.05	0.15	Remainder
6101	0.30-0.7	0.50	0.10	0.03	0.35-0.8	0.03	......	0.10	......	0.03(13)	0.10	Remainder
6151	0.6-1.2	1.0	0.35	0.20	0.45-0.8	0.15-0.35	......	0.25	0.15	0.05	0.15	Remainder
6253(9)	(8)	0.50	0.10	......	1.0-1.5	0.15-0.35	......	1.6-2.4	......	0.05	0.15	Remainder
6951	0.20-0.50	0.8	0.15-0.40	0.10	0.40-0.8	......	......	0.20	......	0.05	0.15	Remainder
7001	0.35	0.40	1.6-2.6	0.20	2.6-3.4	0.18-0.40	......	6.8-8.0	0.20	0.05	0.15	Remainder
7072(10)	0.7 Si + Fe		0.10	0.10	0.10	......	......	0.8-1.3	......	0.05	0.15	Remainder
7075	0.50	0.7	1.2-2.0	0.30	2.1-2.9	0.18-0.40	......	5.1-6.1	0.20	0.05	0.15	Remainder
7076	0.40	0.6	0.30-1.0	0.30-0.8	1.2-2.0	......	......	7.0-8.0	0.20	0.05	0.15	Remainder
7277	0.50	0.7	0.8-1.7	......	1.7-2.3	0.18-0.35	......	3.7-4.3	0.10	0.05	0.15	Remainder

(1) Composition in percent maximum unless shown as a range.

(2) Electrical conductor metal.

(3) No. 1 Reflector Sheet.

(4) Cladding on No. 2 Reflector Sheet.

(5) Cladding on Alclad 2024.

(6) Also contains 0.20-0.6 percent each of lead and bismuth.

(7) Cladding on Alclad 2014.

(8) 45 to 65 percent of magnesium content.

(9) Cladding on Alclad 5056.

(10) Cladding on Alclad 3003, Alclad 3004, Alclad 5050, Alclad 6061, and Alclad 7075.

(11) Cladding on Brazing Sheet

(12) Aluminum percentage determined by difference.

(13) Boron, 0.06 percent maximum.

The American Standard System of Designations for Wrought Aluminum and Aluminum Alloys, H35.1-1957, has been published by The Aluminum Association and can be obtained from ASA as well as from the Association. The standard contains a discussion of the principles on which the system is based and three tables. Table I shows the designations for alloy groups; Table II shows the aluminum alloy designation conversions from the former designation to the new designation; and Table III shows the conversions in reverse, referencing from the new designation to the former designation.

by ***Donald M. White***

Secretary, The Aluminum Association

Building construction *is largest user of aluminum today, making greatest use of sheet and extruded forms of the metal.*

THE new system of designations for wrought aluminum and aluminum alloys recently developed by The Aluminum Association has been approved by the American Standards Association as American Standard H35.1-1957. Adopted by The Aluminum Association at its 1954 summer meeting, the new designations became effective in October of that year. They replaced all designations previously used by member companies of the Association, which account for all the primary aluminum produced in the United States and about 80 percent of semifabricated aluminum products.

The Association believed that this system would be widely acceptable to users as well as producers of wrought aluminum and submitted it to ASA for approval as American Standard. A survey made by ASA bore out this belief and accordingly the system was given final approval as American Standard early in May.

Consisting of four-digit numerical designations, the

new system is expected to meet all of the industry's future needs for wrought alloys. The first digit of each designation indicates the general group to which a given alloy belongs. The last two digits identify the alloy or indicate the aluminum purity. The second digit indicates any modifications of the original alloy or impurity limits.

To aid in the transition from designations previously in use to the new system, many of the old numbers were retained as the last two digits of the new numbers. Thus, former alloy 3S became 3003; 24S became 2024; and 61S became 6061. Temper designations in effect since 1947 continue unchanged, following the alloy numbers as before.

Need for uniform alloy designations became increasingly evident as the industry's tremendous growth of recent years brought a great increase in the number of alloys. With no standard system available, each company naturally chose designations that suited it best, with the result that comparable alloys often carried several different designations. Adoption of the new system has eliminated this condition, and the new designations already have been incorporated into a number of Government specifications.

In the early days of the aluminum industry in this country, designation of alloys was a simple matter because there were few alloys and because few grades of purity were available. However, even at the turn of the century aluminum alloys were designated by a numerical system which was suitable for that time. As the alloys grew in number and type, it was necessary to broaden the system and to introduce a scheme

ALLOY	SHEET	PLATE	TUBE		PIPE	STRUCTURAL SHAPES①	EXTRUDED SHAPES	ROD	BAR	WIRE	RIVETS	FORGINGS & FORGING STOCK
			DRAWN	EXTRUDED								
EC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	......	......
1060	✓	✓	✓	✓	......	......	......	......	......	......	......	......
1100	✓	✓	✓	✓	✓	......	✓	✓	✓	✓	✓	✓
2011	......	......	......	✓	......	......	✓	✓	✓	✓	......	......
2014	......	✓	✓	✓	✓	✓	✓	✓	✓	......	......	✓
Alclad 2014	✓	✓	......	......	......	......	......	......	......	......	......	......
2017	......	......	......	......	......	......	......	✓	✓	✓	......	......
2018	......	......	......	......	......	......	......	......	......	......	......	✓
2024	✓	✓	✓	✓	✓	......	✓	✓	✓	✓	✓	......
Alclad 2024	✓	✓	......	......	......	......	......	......	......	......	......	......
2025	......	......	......	......	......	......	......	......	......	......	......	✓
2117	......	......	......	......	......	......	......	......	......	✓	✓	......
2218	......	......	......	......	......	......	......	......	......	......	......	✓
3003	✓	✓	✓	✓	✓	......	✓	✓	✓	✓	......	✓
Alclad 3003	✓	✓	✓	......	✓	......	......	......	......	......	......	......
3004	✓	✓	......	......	......	......	......	......	......	......	......	......
Alclad 3004	✓	✓	......	......	......	......	......	......	......	......	......	......
4032	......	......	......	......	......	......	......	......	......	......	......	✓
4043	......	......	......	✓	......	......	✓	......	......	✓	......	......
5005	✓	✓	......	......	......	......	......	......	......	......	......	......
5050	✓	✓	✓	......	......	......	......	✓	✓	✓	......	......
Alclad 5050	✓	✓	......	......	......	......	......	......	......	......	......	......
5052	✓	✓	✓	......	✓	......	......	✓	✓	✓	......	......
5056	✓	✓	......	......	......	......	......	✓	......	✓	✓	......
Alcald 5056	......	......	......	......	......	......	......	✓	......	✓	......	......
5086	✓	✓	......	......	......	......	......	......	......	......	......	......
5154	✓	✓	......	......	......	......	......	✓	✓	✓	......	......
5357	✓	✓	......	......	......	......	......	......	......	......	......	......
6053	......	......	......	......	......	......	......	✓	......	✓	✓	......
6061	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Alclad 6061	✓	✓	......	......	......	......	......	......	......	......	......	......
6062	......	......	✓	✓	✓	......	✓	......	......	......	......	......
6063	......	......	✓	✓	✓	......	✓	......	......	......	......	......
6066	......	......	✓	✓	✓	✓	✓	✓	✓	......	......	✓
6101	......	......	✓	✓	✓	✓	......	✓	✓	......	......	......
6151	......	......	......	......	......	......	......	......	......	......	......	✓
6951	✓	......	✓	✓	✓	......	✓	✓	✓	✓	......	......
7001	......	......	......	✓	......	......	✓	✓	✓	......	......	✓
7072	......	......	......	......	......	......	......	......	......	✓	......	......
7075	✓	✓	✓	✓	✓	......	✓	✓	✓	✓	......	✓
Alclad 7075	✓	✓	......	......	......	......	......	......	......	......	......	......
7076	......	......	......	......	......	......	......	......	......	......	......	✓
7277	......	......	......	......	......	......	......	......	......	......	✓	......

①Rolled or Extruded.

✓Indicates the products in which the alloy is normally produced

of classification. For example, alloys were classified according to the predominating alloying elements present. Sheet was initially the only wrought aluminum product made on a large scale so the wrought alloy designations were followed by the letter "S." When wire and other wrought products began to be produced in the lightweight metal, the "S" designations were retained.

In time, various technical groups in the metallurgical and engineering fields adopted new systems of identifying aluminum alloys. New producers entering the industry during and following World War II added their special designations. In the meantime, the designations used in various governmental specifications brought still further confusion.

By providing a uniform set of designations broad enough to replace all of these systems, The Aluminum Association system has brought this confusion to an end. Users can now order by the same alloy number regardless of the supplier.

The general grouping of alloys under The Aluminum Association system is as follows:

Aluminum — 99.00 percent minimum and greater		1xxx
	Major Alloying Element	
Aluminum alloys grouped by major alloying elements	Copper	2xxx
	Manganese	3xxx
	Silicon	4xxx
	Magnesium	5xxx
	Magnesium and Silicon	6xxx
	Zinc	7xxx
	Other element	8xxx
Unused series		9xxx

The 1xxx series, designating minimum aluminum purities of 99.00 percent and higher, differs basically from the other series. The last two digits indicate the minimum aluminum percentage. These digits are the same as the two digits to the right of the decimal point in the minimum aluminum percentage when it is expressed to the nearest 0.01 percent. The second digit designates any modifications in the impurity limits. If the second digit is zero, it indicates that there is no special control on individual impurities; digits 1 through 9, assigned consecutively as needed, indicate special control of one or more impurities. Thus 1030 indicates 99.30 percent minimum aluminum without special control of individual impurities, and 1130, 1230, 1330, etc, indicate the same purity with special control of one or more impurities.

As shown in the table at left, the 2xxx through 7xxx series designate groups of alloys in which copper, manganese, silicon, magnesium, magnesium and silicon, and zinc are major alloying elements. The 8xxx series is used for major alloying elements other than the foregoing, and the 9xxx series is unused at present. In all of these groups, the last two digits have no special significance other than to identify the different alloys in the group. Generally they are the same as those formerly used to designate the alloy. For new alloys, the last two digits will be assigned consecutively beginning with xx01.

The second digit in the 2xxx-8xxx series indicates a modification of the alloy and replaces the letters commonly used for this purpose in the past. Thus, former alloy 17S became 2017 and A17S, 2117; 18S became 2018, and B18S, 2218. Experimental alloys continue to carry a prefix "X," which is dropped when an alloy becomes standard.

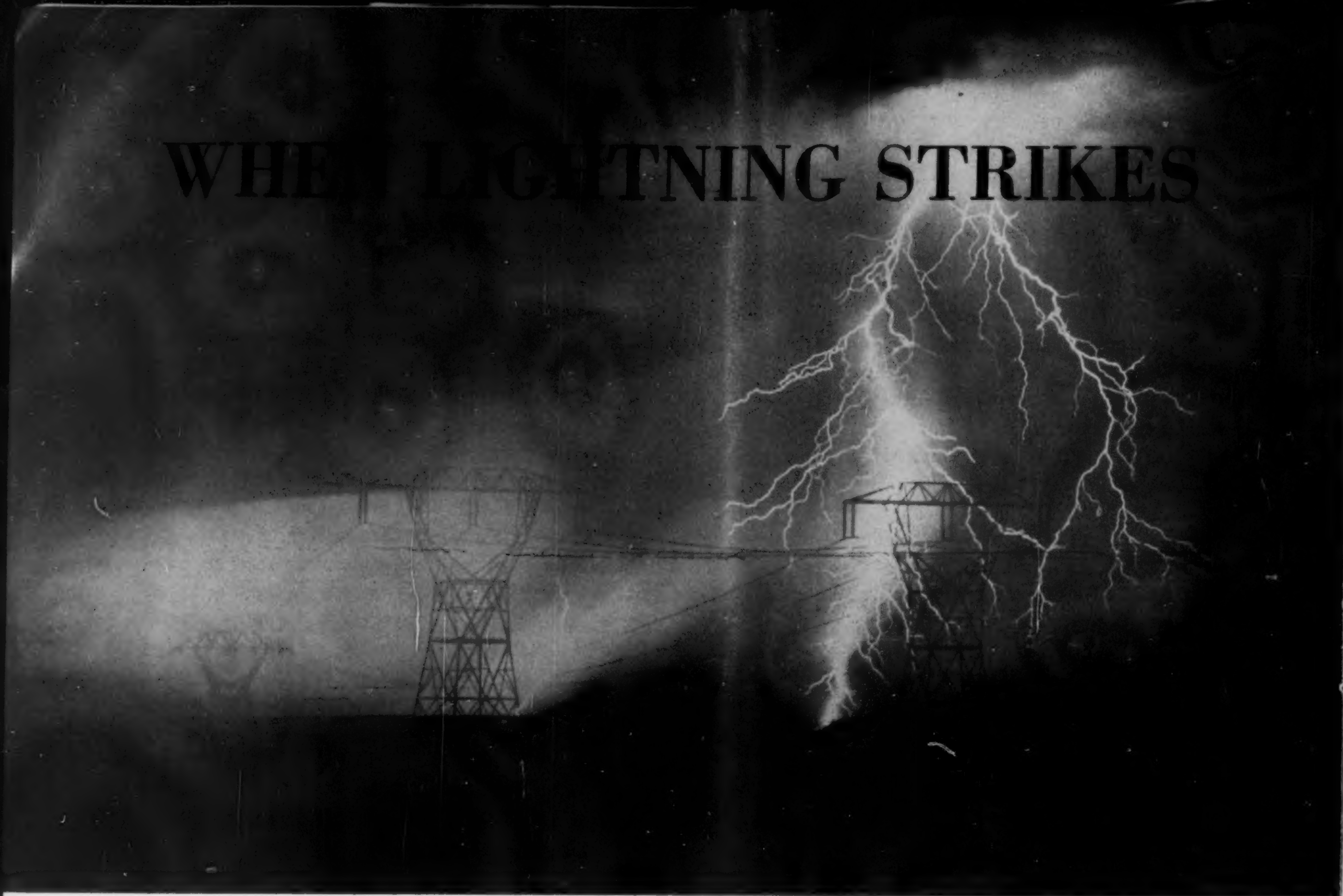
The new system thus is not only fully adequate to cover all existing alloys but is also sufficiently flexible to meet any needs that can now be foreseen. The unused 9xxx series provides for additional designations should these be needed in the future.

Aluminum sheet *emerging from one of the industry's large rolling mills. Sheet and plate account for more than half of the wrought aluminum produced.*

Room divider *(right) designed in aluminum by Alexander Girard for Alcoa's "Forecast" collection.*

Aluminum Co. of America

WHEN LIGHTNING STRIKES



General Electric Co.

Lightning arresters protect expensive electric equipment from destructive upsurge of electrical power. In turn, performance of lightning arresters is protected by specifications and tests outlined in newly revised American Standard.

by **H. R. Stewart**

WHEN lightning strikes, only occasionally the electrical power in your community fails. Usually such failure when it does occur is due to one of many other possible causes; rarely is it due to failure because of the sudden upsurge of electrical power. Electric equipment is protected from lightning's destructive power by lightning arresters; and the measurement of performance of lightning arresters is carefully analyzed and specified in the American Standard for Lightning Arresters for Alternating-Current Power Circuits, C62.1-1957. This American Standard has just been revised and the new edition has now been published. It covers arresters for alternating-current power circuits from the familiar 120-volt lighting circuit up through 230 kilovolt circuits. Arresters for 345-kv circuits are not yet included since the insulation levels (basic impulse levels, better known as B.I.L.'s) associated with this voltage are not yet published by the appropriate standardizing bodies.

The standard covers arresters which are mounted integrally with transformers such as "completely self-protecting" distribution transformers, as well as those separately mounted. Arresters for signal circuits such as fire-alarm, railway signals, supervisory control, carrier current equipment, telephone and telegraph equipment, and radio and television antennas, are not covered; nor are those for direct-current power circuits such as 600-volt street railways or 125/250-volt and 250/500-volt distribution circuits.

All the essential features of lightning arrester performance of interest to the user are covered in the standard. These include both those that provide recognized and uniform methods for determining the quality of the arrester as a protective device for other equipment and also the standardizing values, materials and test methods which indicate the endurance and self-protecting ability of the lightning arrester itself. An examination of the standard will show it to be complete


General Electric Co.

Simulated lightning discharge *of 7,500,000 volts, 33,000 amperes tests Thyrite station-type lightning arrester shown protecting typical 22-kv bus insulator (left)*

Mr Stewart is chairman of ASA Sectional Committee C62 on Lightning Arresters and heads the representatives of the American Institute of Electrical Engineers on the committee. He is with the New England Power Service Company of Boston, Mass.

to a degree befitting a manufactured product which is as far from being "tailor-made" as a lightning arrester.

When a user orders an arrester by catalog number from a manufacturer claiming his product to be in accordance with the American Standard, he can rightly expect (1) that the design will be capable of withstanding impulse and wet and dry 60-cycle flashover tests, 60-cycle sparkover tests, high impulse current tests of short duration, low impulse current tests of long duration, and "duty-cycle" tests, at values and by test methods all as detailed in the standard; (2) that the design will have protective characteristics in accordance with the manufacturer's claims if tested by methods detailed in the standard; (3) that acceptance tests, if ordered, will be in number, type, and method of application as designated in the standard; (4) that the amount of nameplate information will be not less than that specified in the standard, and (5) that construction as to mounting arrangements, protection of ferrous parts, and size of terminal and lead arrangements will conform to the requirements of the standard.

Thus it is obvious that the standard assists the user to compare competitive offerings on the basis of such standardized features. The value to the manufacturer in having standardized steps of voltage rating and a standardized array of other characteristics, such as impulse current withstand value, corresponding to various arrester types is that the number of ratings and types manufactured tend to remain at a practical minimum through ability to resist temptation for intermediate ratings which would be special and which would raise costs for the manufacturer and ultimately for the industry as a whole.

The revised 1957 standard supersedes the 1944 edition. In preparation for the revision much work has been done, first by the Protective Devices Committee (and its subsidiary groups) of the American Institute of Electrical Engineers, the sponsor organization for this standard, and then by the ASA C62 Sectional Committee on Lightning Arresters. This committee consists of delegations from AIEE, the Electric Light and Power Group, National Electrical Manufacturers Association, National Bureau of Standards, and communications and railroad interests.

Lightning discharge *of 7,500,000 volts does not interrupt power of model village, (center foreground), in test of lightning arrester protecting power transformer (right)*

In 1950 the AIEE activity produced a "Report on Lightning Arresters for Alternating-Current Power Circuits, AIEE 28-A" which included recommended revisions of the then existing ASA C62.1-1944 (AIEE No. 28) on valve arresters, and included recommended revisions and expansion of the then existing AIEE No. 24 (1940) on Protector Tubes, and AIEE No. 47 (1945) on Expulsion Arresters, thus combining all alternating-current arresters in one standard. This was further revised by AIEE in 1956 in "Report on Lightning Arresters for Alternating-Current Power Circuits AIEE 28B" and the changes with the reasons therefor are covered in detail in AIEE Transactions Paper 56-636 by Armstrong, Defandorf, and Opsahl.

Concurrently, ASA C62 Sectional Committee on Lightning Arresters had been working since 1952 on an international arrester standard through the International Electrotechnical Commission. Through its liaison with AIEE, cross-fertilization of ideas with other countries contributed to some of the revisions adopted in AIEE 28B.

The revised American Standard C62.1-1957 (AIEE No. 28) is largely based on AIEE 28B-1956, and on the NEMA "Standards of Lightning Arresters" of 1952, including its revisions through March 1953.

Most of the major differences in the revised standard from earlier documents have been described in the AIEE Transactions Paper 56-636 by Armstrong, Defandorf, and Opsahl previously referred to. The additional major differences between the revised American Standard and AIEE 28B-1956 are as follows:

(1) Arresters are classified by name instead of by selection from standardized arrays of impulse withstand currents and, in the case of valve arresters, of impulse discharge currents at which duty cycle tests are made. These names are "station," "intermediate," "distribution," and "secondary-type" for valve arresters, and "protector tube" and "distribution-type expulsion arrester" for the expulsion variety. These will all be recognzed as type names of long-standing in the industry with the exception of "intermediate-type." This was substituted for the previous "line-type" because the latter was a misnomer in that line-type arresters have almost entirely been used in substations rather than on lines. Each type name is tied in the standard to specific ratings and certain performance values. For example, station-type valve arresters are assigned standardized voltage ratings from 3 kv through 242 kv, are tested for 100,000 amperes impulse discharge current short duration withstand, 150 amperes long duration withstand, and at 10,000 amperes impulse discharge current during the duty cycle test.

(2) The requirements as to power factor and rate of rise of recovery voltage of the test circuit in the duty cycle tests on expulsion-type arresters have been relaxed somewhat until further data have been obtained which may lead to a future revision of the standard in these respects.

Two features have intentionally been excluded from the standard:

(a) The proposed international arrester standard previously mentioned will contain specified limits of protective performance to which the U.S. delegation has agreed in deference to common standards-making practices abroad. The American Standard, however, does not contain such quality requirements. It leaves it to the workings of the competitive system to secure optimum balance of protective characteristics and economy.

(b) Whereas the proposed international arrester standard will contain an application guide, technical material of this sort is not viewed in this country as part of a rating and test specification. It may be found in a broader treatment of lightning protective devices and measures of various kinds entitled "Report on Lightning Arrester Applications for Stations and Substations," AIEE Conference Paper 57-22. This paper was prepared by a Working Group of the AIEE Protective Devices Committee.

The American Standard is important not only because of its relation to the operation of lightning arresters but also because of the economic importance of arresters and because of the impact standardization has had on the development of arresters.

While relatively inexpensive themselves, arresters have a material effect on the cost of the vastly more expensive equipment which they protect in that the needed insulation level of the protected equipment, insofar as it is determined by voltages other than the power frequency voltage, is geared to the protective excellence of the arresters. The preparation and publication of an arrester standard do not directly produce protective excellence in the marketed product, but by bringing together the practitioners of the various phases of the arrester art, this process promotes widespread understanding of the issues involved and unquestionably accelerates improvement in the protective performance of lightning arresters and a corresponding cost reduction in the protected equipment.

Copies of American Standard C62.1-1957 are available from the American Standards Association at 60 cents.

IS YOUR CAR "AMERICAN STANDARD SAFE"

by **Frederick N. Clarke**

HAVE you read the local papers today? If so, are you wondering what happened in those accidents reported as caused by a motor vehicle "out of control?" Next time you take your car out on the highway could it, too, go "out of control?"

Undoubtedly some of these accidents were caused by man failure, not car failure; and in such cases the answer is constant vigilance on the part of the driver.

But how many others may be caused by some mechanical difficulty that has gone undetected? Today's car owners are no longer the mechanic-drivers they used to be. The highly complicated machines now on the roads — unlike the much simpler mechanisms of the 1920's and even the 1930's, — call for expert, specialized knowledge and skill for proper care and maintenance. Power steering, power brakes, automatic dimmers, multiple headlights, and even the low-slung bodies, make it impossible for the ordinary home mechanic to care for his own car.

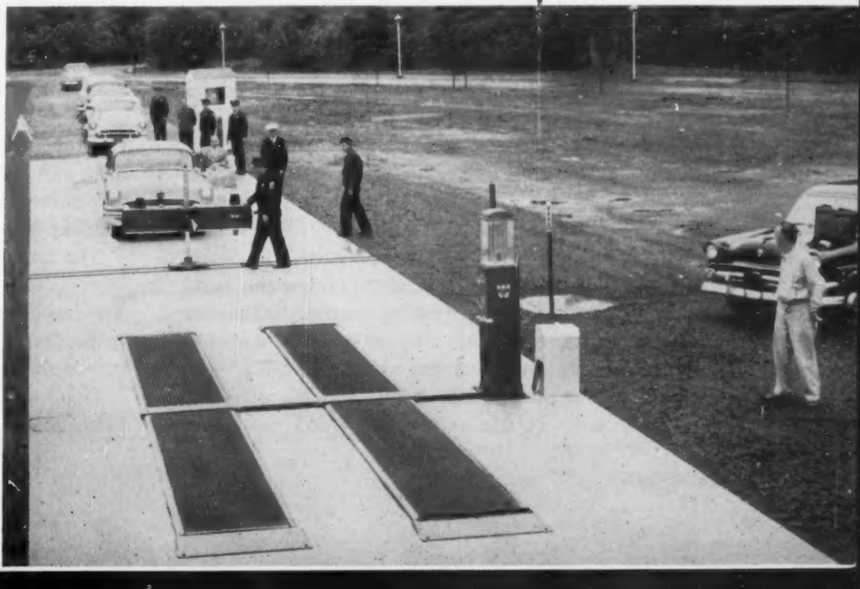
Therefore, he must rely on his service station, and on periodic inspection to spot difficulties before they can erupt in that "out of control" accident that so often causes loss of life, or serious injury.

A strong program to prevent the high toll of motor vehicle accidents must give full attention to two factors: First, the driver, who should be controlled through licensing procedure and enforcement; second, the vehicle, which should not be on any highway without first being approved through inspection.

Statistics prove that inspection, properly carried out, achieves benefits far in excess of those obtained through comparable license control. Periodic inspection is recommended by those who study traffic dangers. Inspection, they say, is one of the most effective means of reducing accidents. Nearly one-fourth of all motor vehicle accidents are caused directly or indirectly by vehicular defects, according to these experts. And offi-

Mr Clarke is Commissioner of Motor Vehicles, State of New Hampshire, and Chairman of ASA's Sectional Committee D7, Inspection of Motor Vehicles.

You can check with the New American Standard Inspection Requirements



New Jersey Motor Vehicle examiner *tests looseness in front wheels of vehicle on hydraulic lift (above). New type of outdoor inspection lane (right) has been constructed by New Jersey in 10 drive-in inspection stations. Used only in fair weather, these lanes can each handle more than 300 vehicles daily.*

cial reports show that more than one-half of all vehicles inspected fail to pass the basic safety examinations.

The solution recommended is regular periodic inspection — the same solution that experts recommend to keep the human body in good repair. Some 14 states and the District of Columbia now require periodic inspection of motor vehicles, permitting a vehicle to use the highway only after approval of the vehicle's mechanical condition. In others, inspection is entirely a voluntary matter on the part of the motor vehicle owner.

The various means used in obtaining inspection approvals, whether state-operated inspection, state-approved inspection, or effective spot checks, have little bearing on the outcome or success of the inspection, if it is conducted thoroughly and in accordance with the Inspection Manual procedure, approved by the American Standards Association. This American Standard, originally approved by ASA in 1941, is now available in a revised edition (American Standard D7.1-1956).

Much can be said for inspection. Undisputable facts, correlated from the records of 14 states and the District of Columbia, show that approximately one-fourth the registered vehicles in this country have passed the required inspection. This may be the reason why jurisdictions that require inspection have such a fine traffic safety record year after year.

When a car is inspected, what do the inspectors look for? This is an important question. If there were no standards as a guide, each inspector could reach a different conclusion, and some important points could be overlooked.

The question is so important that representatives of manufacturers, motor car owners, fleet operators, insurance companies, motor vehicle administrators, safety experts, and manufacturers of equipment used on motor vehicles, worked together through the procedures of the American Standards Association to develop the recommended new standard inspection requirements. This standard, known as American Standard Inspection Requirements for Motor Vehicles, D7.1-1956, sets down the minimum inspection requirements to assure that motor vehicles meet the safe mechanical conditions required. It is primarily intended for use by inspection stations in those states that require periodic inspection of motor vehicles. However, this is not its only intended use. It is also recommended for use by fleet operators — operators of school buses, city buses, trucks, taxicabs — and even by owners of private cars, as a means of keeping their vehicles in mechanically safe condition. The 1956 edition is a revision of an earlier edition approved in 1941.

Starting out with recommended practices for inspection stations, the standard proceeds to outline the methods to be followed in inspecting steering, alignment and suspension, tires and wheels, exhaust and fuel systems, lighting and electrical systems, brakes, glazing, registration plates, body items, and miscellaneous equipment such as fire extinguishers and emergency warning devices. Each one of these sections defines the terms that apply to the equipment under consideration, outlines the inspection procedure to be followed, and specifies the conditions that are to be considered cause for rejection for that particular type of equipment.

Five subcommittees worked on the technical details of the standard. The Electrical Subcommittee was chairmaned by L. L. Beltz, Ford Motor Company, representing the Society of Automotive Engineers. T. J. Carmichael, Administrative Engineer, General Motors, was chairman of the Chassis Subcommittee. Chairman of the Body Subcommittee was G. L. McCain, Chrysler Corporation, representing the Automobile Manufacturers Association. Wilbur L. Cross, Jr, Connecticut Department of Motor Vehicles, representative of the American Association of Motor Vehicle Administrators, was chairman of the Safety Equipment Subcommittee, and George H. Perry, Massachusetts Bonding and Insurance Company, alternate representative of the Association of Casualty and Surety Companies, was chairman of the subcommittee on Inspection Stations.

American Standard D7.1-1956, Inspection Requirements for Motor Vehicles, can be obtained at $1.00 per copy.

Work on the new edition of the American Standard Inspection Requirements for Motor Vehicles, D7.1-1956, was carried on under the sponsorship of the American Association of Motor Vehicle Administrators and the Association of Casualty and Surety Companies. Frederick N. Clarke, Motor Vehicle Commissioner, State of New Hampshire, is chairman of Committee D7. William E. Corgill was secretary of the D7 Committee at the time the standard was being developed.

Very little tangible evidence can be submitted against inspection when the lives saved and injuries prevented are evaluated — not to mention the savings in dollars, time, and prevention of property damage. Under these conditions it is hard to understand why inspection cannot be accepted nationally.

Inspection does more than to provide a safe vehicle. It has a psychological effect on all owners who have to comply, stimulating both owners and operators to keep informed concerning traffic laws generally.

With implementation of the Federal Aid Highway Program, the need for safer vehicles is so great that there can now be no alternative to greater safety. Further surveys are not required to show the necessity of keeping modern motor vehicles safe.

The time has long since passed when motor vehicle drivers were a combination of mechanic and driver. The modern vehicle requires experienced servicing. Inspection helps to remind all drivers that it is their responsibility to drive with care everywhere.

Don't wait for enforcement. Join the Inspection Program now.

STANDARDS ENGINEERS SOCIETY

Sixth Annual Meeting

Hotel Commodore, New York September 23-25, 1957

Theme—STANDARDIZATION, ECONOMY THROUGH APPLICATION

Preliminary Program

(For more detailed information, write Mr Max Reimer, Worthington Corporation, Harrison, N. J.)

MONDAY, SEPTEMBER 23, 1957

9:00 A.M. SES Board of Directors Meeting

10:00 A.M. Registration begins

1:00 P.M. Greetings. *H. G. Arlt, President, SES*
Welcome. *Max Reimer, Chairman, Metropolitan New York Section*
Standards and Management
Sponsored by the Hartford Section
Basic Problems of Standardization. *Dr John Gaillard, Management Counsel*
Management Problems in Standardization. *George F. Habach, Vice-President in Charge of Engineering, Worthington Corporation*
Discussion

3:00 P.M. **Technique and Preparation of Standards**
Sponsored by the Washington Section
Development and Application of Standards. *T. R. Rideout, Consulting Engineer*
Viewpoint of an Engineer in Industry. *Everett Woerter, American Machine and Foundry Company*

5:30 P.M. **Social Hour**
Discussion

TUESDAY, SEPTEMBER 24, 1957

9:00 A.M. **Sources of Information for Standards**
Sponsored by the Montreal, Canada, Section
Government, National, and Company Standards. *S. P. Kaidanovsky, Consulting Engineer*
Technical Books and Press. *Anderson Osborne, Managing Editor, American Machinist*
Making Technical Information Usable. *Rowen Glie, Maxson Corporation*

11:15 A.M. Making Standards Information Available
Sponsored by the Detroit Section
Standardization by Machine Methods. *A. M. King, IBM, Poughkeepsie*
Methods of Reproducing Standards. *Clifford W. Straitor, Jr, Standards Engineer, Detroit Edison Company*
Discussion

12:30 P.M. Luncheon. *Dutch Treat*

2:00 P.M. **Cooperative Efforts Between Standards and Other Departments.** *Sponsored by the Philadelphia Section*
Quality Control and Standards. *James L. Harris, Manager, Quality Control, Standard Pressed Steel Company, Jenkintown, Pa.*
Design and Standards. *Madhu S. Gokhale, Administrator of Standards, RCA, Camden, N. J.*
Purchasing and Standards. *E. Philip Kron, Assistant Director of Purchasing, Eastman Kodak Company, Rochester, N. Y.*
Discussion

3:30 P.M. **Reliability and the Standards Engineer**
Sponsored by the Pittsburgh Section
Reliability Fundamentals. *C. M. Ryerson, Reliability Administrator, RCA, Camden, N. J.*
Military Reliability Program. *James Bridges, Office of Assistant Secretary of Defense.*
Discussion

6:00 P.M. Social Hour

7:00 P.M. Annual Banquet. *Speaker to be announced.*

WEDNESDAY, SEPTEMBER 25, 1957

9:30 A.M. **Cost Reduction.** *Sponsored by the Boston Section*
Value Analysis. *Wm L. Healy, General Electric Company*
Simplified Drafting Practices. *J. H. Bergen, American Machine and Foundry Company*
Discussion

1:00 P.M. Awards Luncheon. *Herbert G. Arlt, President, Standards Engineers Society, presiding*
Presentation of Fellowships and Honorary Life Member and other honorary awards

Ladies' Program

Ladies are invited to a get-acquainted brunch at 10:00 A.M. on Monday morning, September 23. The program for their entertainment includes a visit to the United Nations, a conducted bus trip around New York City, including a boat trip to the Statue of Liberty, and a day of shopping or sightseeing on Wednesday. This is in addition to the Social Hours on Monday and Tuesday evenings, the banquet Tuesday evening, and the Awards luncheon Wednesday noon. Modest charges will be made for all these events with the exception of the Social Hours.

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering copies of standards, please refer to the number following the title.

621.4 INTERNAL COMBUSTION ENGINES

Bulgaria

Valve lifting cams, technical requirements BDS 2253

Aluminum alloy pistons for automobile and tractor engines BDS 2254

Czechoslovakia (CSN)

Automobile motor type "Tatra 108" CSN 30 2902

Automobile motor type "Tatra 111A" CSN 30 2901

Diesel motors for tractors, characteristics CSN 30 2008

Connecting rods of automobile engines, quality, testing, acceptance rules CSN 30 2201

11 stds for piston rings CSN 02 7001, -7010/9

9 stds for two-pole hot resistance coil for ignition of Diesel type engines CSN 304105, -4150/3, -4155/7, -4159

Israel (SII)

Spark plugs for internal combustion engines S.I. 185

Japan (JISC)

Small size internal combustion engines for land use JIS B 8010-1953 *

Small size water-cooled kerosene engines for land use JIS B 8011-1956 *

Small size water-cooled diesel engines for land use JIS B 8012-1956 *

Test codes for small type internal combustion engines for land use JIS B 8013-1953 *

Bike motors JIS B 8021-1953 *

Spark plug for land type internal combustion engine JIS B 8031-1954 *

Piston Ring for internal combustion engine JIS B 8032-1953 *

Poland

Internal combustion engines: Glossary of terms—5 languages: (English, French, German, Polish, Russian) PN M-01502

Letter symbols used in caculation of combustion engines PN M-01501 - 54

Spain (IRATRA)

High pression unions for heavy oil injecting pumps UNE 10 027

United Kingdom (BSI)

Limiting dimensions of air filters for internal combustion engines & compressors other than for aircraft B.S. 2806:1956

USSR

Internal combustion motors for tractors: testing on stand GOST 491-55

Diesel engines, stationary and marine type GOST 7433-55

Aluminum pistons for automobile engines GOST 865-54

3 stds for piston pins and rings GOST 776, 7133, 7295

Connecting rod for automobile engine GOST 845-54

Cast iron sleeves for Diesel cylinders GOST 7274-54

Fuel pump assembly of stationary ship Diesel engines GOST 7726-55

621.6 FLUID DISTRIBUTION, STORAGE, CONTAINERS. PIPES. PUMPS.

Czechoslovakia (CSN)

Packing rings CSN 02 93 10/2

3 stds for cast steel flanges N.P. 100, 160, 250 kg/cm² CSN 13 12 15/7

3 stds for welding collar flanges N.P. up to 250 kg/cm² CSN 13 12 35/7

4 stds for flat welding flanges N.P. up to 16 kg/cm² CSN 13 12 21/4

28 stds for different pipe unions and other fittings CSN series 13 77 . . /13 79 . .

Steel welded pipes CSN series 13 10 21

4 stds for sprayer nozzles CSN 30 23 54/6, -23 59

3 stds for precision seamless steel pipes CSN 42 67 10/2

10 stds for different cast steel valves, flange CSN 13 3512/6, -3612/6

6 stds for different sizes of welding collar flanges CSN 13 1229/34

4 stds for different cast iron valves CSN 13 35 . . , -36 . .

4 stds for steel welding flanges, N.P. from 2.5-16 kg/cm² CSN 13 1221/4

4 stds for cast steel, flanged atop valves for N.P. from 160 - 250 kg/cm² CSN series 13 35

10 stds for cast steel, flanged angle and check valves for N.P. from 16 - 100 kg/cm² CSN series 13 40

France (AFNOR)

Standard dimensions for steam heating connections of railway petroleum tanks NF M 88 - 154

Flanged pipes and fittings series "BR", general NF A 48-501

Joints. Dimensions of flanges NF A 48-502

Flange bolts NF A 48-503

Gaskets NF A 48-504

Flanged pipes. Centrifugal type with screwed-on flanges NF A 48-505

Flanged pipes. Sand cast type NF A 48-506

9 stds for different fittings for flanged sockets, elbows, tees, crosses, etc NF A 48-507/15

Pipes and fittings series "EX", bell and spigot type, general NF A 48-601

17 stds for different fittings for "EX" series piping NF A 48-602/18

Italy (UNI)

Seamless steel pipes, for marine use UNI3872

Japan (JISC)

Dimensional tolerance for pipe flanges JIS B 2203-1955 *

7 stds for pipe flanges for different nominal pressures JIS B 2210/16-1955 *

4 stds for different inserted welded flanges JIS B 2221/4-1955 *

Measuring method of pump capacity JIS B 8302-1954*

6 stds for testing methods for different pumps JIS B 8303/6,11/12-1955 *

Testing method for centrifugal pump and axis flow pump JIS B 8301

Netherlands (HCNN)

Fittings for pressure pipelines. K-pieces and L-pieces NEN - 163

Poland

Y-type cock for gas distribution PN M-75202

Centrifugal pumps for acids and similar liquids PN M-44520

Roumania (CSS)

Forged steel pipe flanges, oval, screwing type STAS 2765-51

Outlet valves for liquefied gas tanks STAS 2667-56

Pressure regulating valve for gas tanks STAS 2893-56

Spain (IRATRA)

Flanges, for nominal pressures 25 and 40 UNE 19 154

Seamless steel tubes UNE 19062

USSR

Gas pipe cocks GOST 8114-56

Shut-off valve, grey cast iron GOST 6681-56

Safety valves, cast iron, weighted lever type GOST 5335-56

Check vales, malleable cast iron for turbine piping GOST 8077-56

Water ejector from flooded places GOST 7498

Centrifugal pumps, electrically driven GOST 7363-55

621.791 WELDING AND ALLIED TECHNIQUES

Austria (ONA)

Weld testing ÖNORM M 3054

Germany (DNA)

Soldering torch DIN 8504

Round-wick alcohol lamps DN 8509/10

Filler metal DIN 8555

Filler metal for arc and gas welding of cast iron, types GG-12 and GG-22, technical specifications of DIN 2301

Metric taper of outlet connector of liquid gas tank used in welding DIN 8507

India (ISI)

Specification for brazing solder IS 24-1956

Specification for silver solder IS 192-1956

Spain (IRATRA)

Rules for the examination and classification of arc welders UNE 14 010

Switzerland (SNV)

Spot welding, rules for inspection of VSVM 14104

United Kingdom (BSI)

Class 1 oxy-acetylene welding of steel pipelines and pipe assemblies for carrying fluids BS 1821:1957

General recommendations for the gas welding of wrought aluminum and aluminum alloys BS 1126:1957

USSR

Silver solder GOST 8190-56

Automatic single electrode welding machine GOST 8213-56

621.82 TRANSMISSION SYSTEMS AND PARTS

Bulgaria

9 standards for different types of bearings BDS 2381/88-56, BDS 2410-56

Shaft coupling sleeves BDS 2444-56

Czechoslovakia (CSN)

Taper roller bearings, mounting dimensions CSN 02 4625

Germany (DNA)
Needles for needle bearings DIN 5402 B1.3
Involute spline basic dimensions DIN 5482 B1.3
Universal joints: dimensions, load capacity, construction of DIN 808

Poland
16 stds for ball and roller bearings PN M-series 86

Spain (IRATRA)
Sprocket wheels for roller chains UNE 18011
Conveyor belts of rubberized fabric, general characteristics and tolerances of UNE 18025

Switzerland (SNV)
14 stds for fast couplings, type P VSM 15323/36

621.89 LUBRICATION

Belgium (IBN)
Precipitation number of lubricating oils NBN 52.047
Cone penetration of lubricating greases NBN 52.063

Czechoslovakia (CSN)
Turbine oil CSN 65 62 30
Industrial oils CSN 65 66 10/1
Lubricating greases CSN 65 69 48
Diesel oils CSN 65 66 49

Germany (DNA)
Lubricating oils, test for fluidity of DIN 51568
Lubricants, flash point test (Marcusson test) DIN 51584

India (ISI)
Specification for internal combustion engine lubricating oils IS 496-1955

Israel (SII)
Normal lubricating oil for industrial purposes SI 208

Japan (JISC)
3 stds for grease cups JIS B 1571/3

Poland
4 stds for different lubricants PN C-04139, 04152, C-96055, 96072
2 stds for solid lubricants, testing of PN C-04076, -78, -195
3 stds for testing oils and solid lubricants PN C-04141, -079, -081

Roumania (CSS)
5 stds for different lubricants STAS 4947/51-55

Spain (IRATRA)
Determination of lead contents in lubricating oils UNE 7. 106

USSR
Consistent lubricating greases. Determination of viscosity GOST 7163-54
Compressor oils GOST 1861-54
Solid lubricants GOST 7142-54
"Sulfafrezol" oil for lubricating and cooling milling machines GOST 122-54
Light oil lubricating gun GOST 8043-56
Watch lubricating oils GOST 7935/6-56
Lubricating oil for telegraph apparatus GOST 7916-56
Motor oils, determination of corrosive power GOST 8245-56

Yugoslavia (JUS)
5 stds for different grade lubricating oil JUS B.H3.270/4
3 stds for cutting oils JUS B.H3.433/4,437
7 stds for different greases JUS B.H3.531/2,537
2 stds for axle grease JUS B.H3.570/1

624 CIVIL ENGINEERING

Bulgaria
Wooden window frames for dwellings BDS 1945
Wooden doors for dwellings BDS 1948
Symbols used in mechanics BDS 1949/50

Germany (DNA)
4 stds pertaining to welded steel structures DIN 4100, B1.1-3
Protection of structural wood DIN 68800
Mud and plaster structures DIN 18955/6
9 stds for mud walling constructions DIN 18952, 18953, B1.1/6, 18954, 18957
General rules for calculation of steel frame reinforced concrete structures DIN 4239, B1. 1, 2
Structural clay, testing of DIN 18952, B1.2

India (ISI)
Code of practice for magnesium oxychloride composition floors IS 658-1956
Magnesium oxychlorite flooring IS 657-1956

Israel (SII)
Rolling shutters: rails S.I. 209

Japan (JISC)
Standard method of heat insulation JIS A 9501

Poland
8 stds for different methods of testing soil properties for foundations PN B-04484/7, -489/91, -493
Structural requirements and calculations for hollows-brick constructions PN B-03304

USSR
Metal and wooden sashes for industrial buildings GOST 477-56, 7920-56

625.7 HIGHWAY, ROAD ENGINEERING

Australia (SAA)
Residual bitumen and fluxed native asphalt for roadmaking purposes AS A.10-1956
Glossary of names for earthmoving and constructional plant AS A.79-1955
Cutting edges for dozers and scrapers A.S. No. A.85-1956

Belgium (IBN)
Concrete curbstone for foot-path and highways NBN 408

Israel (SII)
Asphalt roads: aggregates SI 168
Asphalt roads: bitumen SI 161

Japan (JISC)
4 stds for concrete and reinforced concrete parts for road construction (curbs, sidewalk slabs, etc.) JIS A 5304/7

Poland
2 stds for road surface treatment PN S-24050, PN S-30001

Portugal (IGPAI)
Test of bituminous compounds P - 142

Roumania (CSS)
Standard width of different types of roads STAS 2900-54

USSR
Scarifier, attachable GOST 7425-55
Trailer type scrapers GOST 5738-54
Tractor bulldozers GOST 7410-55

628.9 ILLUMINATING ENGINEERING

Belgium (IBN)
Code of practice for hospital lighting NBN 355

Brazil (ABNT)
Vocabulary in the field of illuminating engineering (no symbol)

Germany (DNA)
Ceiling hooks and globes for electric lights DIN 49980
Hand flash spot light battery operated DIN 14643
Rules for sluice-way illumination DIN 67500

629.11 LAND VEHICLES. TRANSPORT ENGINEERING

Bulgaria
Automobile and tractor valves. Technical requirements BDS 2303 - 55
Automobile and tractor valves. Technical requirements BDS 2303 - 55

Czechoslovakia (CSN)
Load pulling hooks (5 stds) CSN 36 36 70/4

France (AFNOR)
Clutch friction lining NF R 121-01
Gearbox gasket NF R 124-03
Distributor, model of 27 mm NF R 133-04
Head lamp for motorcycle NF R 243-02
Pedal crank of bicycle NF R 321-04

Germany (DNA)
3 stds for pneumatic rubber tires for different motor vehicles DIN 7804, B1.1+2, 7805, B1.1
SDC-rims for motor vehicles and trailers, 16 in. and 24 in. DIN 7826

Netherlands (HCNN)
Rules for electric installations in motorbuses NEN - 925
Motor vehicles. Couplings for truck-tractors and semi-trailers V - 1049 A

Israel (SII)
Automotive spare parts: steering ball joint S.I. 210

Poland
2 stds for diagrams of air-brakes system for motor vehicles PN S-47031/2
Rear light for trucks PN S-76512

USSR
Trolleybus GOST 7495-55
Trailer couplings GOST 3163-54

France (AFNOR)
4 stds for manhole of marine boilers, with different types of screw caps NF J 61-808,10,12,14

Italy (UNI)
27 stds for different bushings for passing electric cables through bulkhead UNI 3841/67

Roumania (CSS)
Survey of different valves used in marine pipe lines STAS 4982-55
2 stds for cast steel angle valves, marine type STAS 5131/2-56

664 FOOD INDUSTRY. PRESERVATION

India (ISI)
Liquid glucose IS:873
Dextrose monohydrate IS:874

Mexico (DGN)
Canned green olives F 49 - 1956

Union of South Africa (SABS)
Standard spec for canned hake (Cape Cod) SABS 562-1956

667.6/.8 PAINTS. VARNISHES. LACQUERS

Australia (SAA)
Definitions of terms relating to vitreous enamel finishes A.S. No. K.96-1956

France (AFNOR)
White paints grinded in linseed oil NF T 31-001

Germany (DNA)
Protective coating of steel structures DIN 55928
Testing of paint DIN 53155

India (ISI)
Specification for sealing wax IS 868 - 1956

Mexico (DGN)
Dyeing of cotton cloth DGN A 34-1956

Spain (IRATRA)
Determination of specific gravity of liquids used in the manufacture of paints and varnishes UNE 48 014 h2
6 stds for different pigments used in the manufacture of paints and enamels UNE 48 040/1/2/4/6/7

NEWS BRIEFS.....

• Nationally uniform methods of compiling statistics on the accident experience of fleets of motor carriers were requested by a general conference June 19. Those present asked the American Standards Association to initiate a project under the sectional committee method, with the National Safety Council as sponsor.

The scope of the work as proposed would be: "To formulate standard definitions of vehicles, fleets, exposure, and accidents which can be used to determine methods of recording and measuring motor vehicle accident experience of commercially operated fleets."

These records would be used only in the case of motor vehicles in which the driver is acting as an employee as distinguished from vehicles driven for pleasure or on personal business.

Several different organizations have issued and are using different methods of recording and compiling statistics for fleets of motor vehicles, it was explained. Contests and awards for the fleet operating the most number of miles without an accident are based on these different methods. Now, those concerned would like to be able to use nationally comparable methods that will give nationally comparable figures.

Among the problems facing the committee will be how to set up a factor to measure rate of exposure for these vehicles. Also to be determined is the type of accident to be counted—whether a back strain due to lifting a package off a truck or an accident when a person is getting on or off a vehicle, for example, should be included in the accident statistics.

Organizations represented at the meeting were: Association of Casualty and Surety Companies; American Society of Safety Engineers; U.S. Post Office Department; National Safety Council; Interstate Commerce Commission; American Petroleum Institute; U.S. Public Health Service; American Transit Association; American Society of Civil Engineers; Automotive Safety Foundation; Markel Service, Incorporated; Automotive Crash Injury Research of Cornell Medical College; American Statistical Association; U. S. Bureau of Public Roads; National Highway Users Conference; U. S. Department of the Navy.

Two other groups have indicated interest in the project—the American Trucking Association and the American Gas Association.

• Sectional Committee B5 on Small Tools and Machine Tool Elements has selected two representatives to speak for it at international meetings on machine tools in Paris this Fall. The representatives, who will be accredited by the American Standards Association, the USA member of the International Organization for Standardization, are: Harold S. Sizer, Director of Design, Machine Tools, Brown and Sharpe Manufacturing Co, Providence, Rhode Island; C. T. Blake, Director of Engineering, Warner and Swasey Company, Cleveland, Ohio.

Mr Sizer and Mr Blake will attend a meeting of Working Group 3 on Elements of Machines September 30 and October 1. This subcommittee of ISO Technical Committee 39 has before it for final study Proposed ISO Recommendations covering machine tapers (self-holding), machine tool feeds and speeds, T-slots and accessories, lathe tool posts, lathe centers with 5 percent tapered or Morse shank, and tapers for tool shanks. Other subjects on the agenda are direction of rotation controls, symbols for nameplate data, mounting of grinding wheels, and spindle noses for lathes.

An editorial committee of Working Group 2 on Test Methods is also scheduled to meet September 27, 28, and 29 at Paris. This editorial committee will work on a proposed test code for lathes. If it completes preparation of the proposed code in time for consideration by Working Group 2, Test Methods, a meeting of that group may also be held following the meeting of Working Group 3 early in October, giving the USA representatives an opportunity to meet with other members of the working group to discuss the proposed test code.

• T.R. Rideout, formerly consultant to the Otis Elevator Company, has set up an independent practice in Consulting Engineering. Mr. Rideout specializes in gearing design and manufacturing development as well as production development and machine design. He is a member of ASA Sectional Committees B6 on Standardization of Gears and B29 on Transmission Chains and Sprockets.

• At a General Conference on May 7 a recommendation was adopted that a project be initiated for the standardization of mounting dimensions of door locks and flush bolts. Representatives of fifteen organizations voted to recommend the sectional committee method for the development of the standards and the National Builders Hardware Association, which had proposed the work, as sponsor for the project.

• The American Iron and Steel Institute has named Edward S. Steigner as one of its representatives on the Standards Council of the American Standards Association. Mr Steigner is supervisor of the Service Engineering Department for the

Edward S. Steigner

Youngstown Sheet and Tube Company, Akron, Ohio.

He has been with the company since 1934 following graduation from Case Institute of Technology, where he received his Master of Science degree. Starting as a tester in the Metallurgical Department he has had experience as assistant metallurgist for tubular products, metallurgist for flat rolled products, and as tubular products development engineer. In 1954 he organized the Service Engineering Department. He now heads this department.

Mr Steigner is a member of the American Society for Metals, the American Iron and Steel Institute, the American Ordnance Association, and the Mahoning Valley Industrial Management Association.

The Institute's other representatives on the Standards Council are: C. M. Parker, secretary, General Technical Committee, American Iron and Steel Institute; and L. H. Winkler, Bethlehem Steel Corporation.

• Equivalent terms for plastics in French, English, and Russian have been listed in a newly completed Draft ISO Recommendation, with the same terms in German, Spanish, and Italian listed in an Appendix. Also in an Appendix are definitions in French and English which are intended to serve as a guide to the listing of terms in other languages.

The American Standards Association, USA member of ISO, holds the Secretariat for ISO Technical Committee 61 that prepared the recommendation. ASA has submitted the draft recommendation to the International Organization for Standardization which will circulate it to all ISO Member-Bodies for their vote as a step in its approval.

Completion of this impressive document is the result of seven years of activity by Working Group 1, on Nomenclature and Definitions, which was authorized by ISO/TC 61 at its first meeting in 1951. The national standards association in France holds the secretariat for Working Group 1. Dr Gordon S. Kline, National Bureau of Standards, has been the USA representative on the Group since the beginning of its activities.

The American Group for ISO/TC 61, which serves in an advisory capacity to the American Standards Association on all technical matters before this international committee was organized by Committee D-20 on Plastics of the American Society for Testing Materials and works closely with that committee. C. Howard Adams, Manager, Plastic Product Development Research and Engineering Division, Monsanto Chemical Company, is chairman of the American Group.

What Is Your Question?

What are safe working pressures for steel, malleable iron, and cast iron countersunk head pipe plugs?

American Standard B16.14-1949, Ferrous Plugs, Bushings and Locknuts, has the following to say on this subject under the section "Pressure Rating":

"Plugs and bushings have no definite ratings and are used with regular 125-lb cast iron and 150-lb malleable-iron screwed fittings. For higher pressures solid plugs (not cored) are quite commonly used, and face bushings are recommended."

Is any work on reliability of electronic components going on in committees under ASA procedures?

It is expected that the results of work being done on high reliability components by the M-1 Committee of the Radio-Electronic-Television Manufacturers Association and by the Armed Forces will be submitted to ASA Sectional Committee C83 on Electronic Components when the documents are far enough along to do so. Also, RETMA has a committee working on vibration and shock testing for reliability SQ-14. This committee is developing a standard on environmental testing that is well advanced. It is also cooperating with Committee C83 on an international recommendation on environmental testing for consideration by the International Electrotechnical Commisison. E. W. Bisson of the General Electric Company's Electronics Division at Syracuse is chairman of RETMA SQ-14. Leon Podolsky, Sprague Electric Company, North Adams, Mass., is chairman of ASA Sectional Committee C83.

What is ASA color 61?

This is one of four shades of gray selected as standard for use by industry on apparatus and equipment and specified in American Standard Z55.1-1950. The standard does not specify the type of paint to be applied but merely what the color of the paint should be. Therefore, any type of paint — enamel, oil base, latex base, water base — may be used. Color chips of each of the four American Standard shades of gray are available at $1.00 per chip. The 61 gray is the lightest of the four.

BOOKS.....

Introduction to Operations Research. *C. West Churchman, Russell A. Ackoff, and Leonard Arnoff. First edition. 1957. 6x9. 645 pp. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N.Y. $12.00.*

Review by S. P. Kaidanovsky

As the title indicates, this book is an introductory treatment of this new subject, based on lecture material for the "Short Course in Operations Research" offered at Case Institute of Technology.

In the most general sense, Operations Research (O.R.) can be characterized as "the application of scientific methods, techniques, and tools to problems involving the operations of systems so as to provide those in control of the operations with optimum solutions to the problems."

O.R. is becoming important and useful to engineers and managers in many fields. It is interesting to note that at the meeting of the National Association of Purchasing Agents in Atlantic City on May 25, Dr Howard T. Lewis, Professor Emeritus of Harvard's School of Business Administration, urged the use of Operations Research by purchasing agents. It becomes evident that multiple application of O.R. in different fields makes it important for those concerned with development of standards and specifications to make use of this new tool wherever possible.

The objective of this book is to provide what the authors call "prospective consumers of Operations Research" with a basis for evaluating the field and understanding its procedure. For the new and future "practitioners of Operations Research" it presents a survey of the field and a background for further education to gain competence with the tools, methods, and procedure. The aim of the authors in both cases has been "to create an understanding of the application of scientific method to O.R. and not listing of techniques." The text is restricted to the application of O.R. to executive-type problems in organizations.

The book consists of X parts and 22 chapters. Some of them require only elementary training in mathematics, others require a knowledge of elementary calculus. Part I is concerned with the meaning of O.R.; the subject is defined and its characteristics are explored.

Part II deals with the analysis of organization, formulation of problems, and assignment of relative value (weights) to the objectives involved.

Part III discusses the representation of some subject of inquiry through a "scientific model" for purposes of prediction and control. It is concerned with what a scientific model is, what types of models there are, how to construct them, and how to use them in solving problems.

Parts IV through VIII present various models, such as inventory, control, allocation, waiting time, replacement, and competition, which have proved useful in conducting O.R. studies. Each method is illustrated by a case example, pointing up important implications of O.R. in business and industry.

Part IX turns to the problems of (1) testing the adequacy of models and the solutions derived from them, (2) designating procedures for controlling the solution where it is used, and (3) implementing the solution (i.e. putting it to work).

Part X deals with administration of O.R., selection and training of personnel and organizing the research team and its work.

The basic coverage of principles and methods of O.R. is presented in a clear and straightforward manner. Even the non-mathematical reader can get interesting ideas of the possibilities of Operations Research in solving management problems in business and industry.

Standard Rated Currents (2 to 63A) of Fuse Links for Low-Voltage Fuses. *IEC Publication 88. 1957. First edition. International Electrotechnical Commission, 1 rue de Varembé, Geneva, Switzerland.* 60 cents

A single series of numbers is all this international recommendation contains. But these numbers represent the values in amperes of rated current for fuse links of low-voltage fuses, now recommended for manufacture and use in all countries.

This series was recommended to IEC for approval and publication by 12 of the IEC member countries: Argentina, Belgium, Denmark, Finland, France, German Federal Republic, Italy, Netherlands, Sweden, Switzerland, United Kingdom, and Yugoslavia.

ASTM Standards on Plastics. *Paper cover, 6 x 9. 871 pp. American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.* $6.00

This compilation of ASTM Standards on Plastics contains 40 specifications, 93 test methods, 19 recommended practices, and 5 definitions. Of these, 34 are new or revised.

Among the topics covered are the mechanical, thermal, optical, and performance properties of plastics, together with standards for molding compounds, standard shapes, and molds. Two proposed standards are appended for information.

Metrology of Gage Blocks. *NBS Circular 581. 1957. 119 pp. U.S. Government Printing Office, Washington 25, D.C.* $1.50

This publication contains the proceedings of a symposium on gage blocks held at the National Bureau of Standards on August 11 and 12, 1955. Its purpose was to permit the exchange of ideas between the bureau and manufacturers for development of better techniques for manufacture and use of gage blocks. This circular was published at the request of persons who had attended the symposium and others in Government and industry interested in the field of precision measurements. It contains the 15 papers presented at the conference as well as reports of formal and informal discussions.

GAILLARD SEMINARS

Twenty-five men representing twenty-one organizations attended Dr John Gaillard's private seminar on Industrial Standardization held in New York City, June 24 through 28, 1957. The organizations are:

AMP Incorporated
*Arabian American Oil Co
Aramco Overseas Co
Avco Mfg Co
Clark Bros Co
Exide Industrial Division
 The Electric Storage Battery Co
*International Business Machines Corp
Jack & Heintz, Inc
Kearney & Trecker Corp
Leeds & Northrup Co
LeTourneau-Westinghouse Co
Lockheed Aircraft Corp
 Missile Systems Division
Ordnance Weapons Command
 Rock Island Arsenal
Quartermaster Research & Engineering
 Center, US Army
Radio Corporation of America
Ray-O-Vac Co
Rock Island Arsenal
 Ordnance Corps
Sanders Associates, Inc
Steel Company of Canada
*Warner & Swasey Co
Watertown Arsenal
 Ordnance Corps

Three of the organizations (marked by an asterisk) had been represented at one or more previous sessions.

The Gaillard Seminars, held in New York City twice a year since 1947, have so far been attended by 358 men from 200 organizations.

The next session — the first one to be held on the West Coast — is scheduled for November 18 through 22, 1957, at the St Francis Hotel, San Francisco, that is, during the week immediately following the ASA National Conference on Standards.

For details and advance registration, write to Dr John Gaillard, Box 273, Route 1, Briarcliff Manor, N. Y.

AMERICAN STANDARDS UNDER WAY

Status as of July 25, 1957

Legend — *Standards Council* — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks. *Board of Review* — Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks. *Standards Board* — Approves standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Note — Send check when ordering standards listed as published to avoid service charge for handling.

ACOUSTICS, VIBRATION, AND MECHANICAL SHOCK

American Standard Published

Pickups for Shock and Vibration Measurement, Method for Specifying the Characteristics of, Z24.21-1957 $1.00
Sponsor: Acoustical Society of America

BUILDING AND CONSTRUCTION

American Standard Published

Steel for Bridges and Buildings, Specifications for, ASTM A 7-56T; ASA G24.1-1957 $0.50
Sponsor: American Society for Testing Materials

In Standards Board

Welded Steel Wire Fabric for Concrete Reinforcement, Specifications for, ASTM A 185-56T; ASA G45.1- (Revision of ASTM A 185-37; ASA G45.1-1942)
Sponsor: American Society for Testing Materials

CHEMICAL INDUSTRY

In Standards Board

Common Name for 3-(p-chlorophenyl)-1,1-dimethyl urea (monuron), K62.2-

Common Name for 3-(3,4-dichlorophenyl)-1,1-dimethyl urea (diuron), K62.3-

Common Name for 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate (erbon), K62.6-

Common Name for 1-*n*-butyl-3(3,4-dichlorophenyl)-1-methylurea (neburon), K62.8-

Common Name for 2,2-dichloropropionic acid (dalapon), K62.9-

Common Name for 2-(2,4,5-trichlorophenoxy)propionic acid (silvex) K62.10-

Common Name for p-chlorophenyl p-chlorobenzenesulfonate (ovex), K62.11-
Sponsor: U.S. Department of Agriculture

In Standards Board

Letter Symbols for Heat and Thermodynamics, Y10.4- (Revision of Z10.4-1943)
Sponsor: American Society of Mechanical Engineers

Drafting Standards Manual, Y14
 Section 1 Size and Format
 Section 2 Line Conventions, Sectioning and Lettering
 Section 4 Pictorial Drawing
(Supersedes specified portions of American Standard Drawings and Drafting Room Practice, Z14.1-1946)
Sponsors: American Society of Mechanical Engineers; American Society of Engineering Education

Graphical Symbols for Use on Railroad Maps and Profiles, Y32- (Revision of Z32.2.5-1950)
Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

ELECTRIC AND ELECTRONIC

American Standard Approved

Grounding and Bonding Equipment, Safety Standard for, C33.8-1957
Sponsor: Underwriters' Laboratories

In Board of Review

Wet-Process Porcelain Insulators (Apparatus-Cap and Pin Type), EEI TDJ-58; NEMA 146-1956; ASA C29.8-

Wet-Process Porcelain Insulators (Apparatus-Post Type), EEI TDJ-59; NEMA 147-1956; ASA C29.9-
Sponsor: Electrical Standards Board

72-Inch T-8 Instant-Start Single-Pin Hot-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.805- (Revision of C78.805-1951)

25-Millimeter 93-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1104- (Revision of C78.1104-1951)

25-Millimeter 69-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1106-

25-Millimeter 45-Inch Cold-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.1107-
Sponsor: Electrical Standards Board

In Standards Board

Weather-Resistant Wire and Cable, Polyethylene Type, Specifications for, C8.35-
Sponsor: Electrical Standards Board

Rotating Electric Machinery Forming a Part of the Power Equipment on Electrically Propelled Railway Cars, Railway Locomotives, and Coaches (Trolley and Prime Mover), C35.1- (Revision of C35.1-1943)
Sponsor: American Institute of Electrical Engineers

Schedules of Preferred Ratings for Power Circuit Breakers, C37.6- (Revision of C37.6-1955)

Power Circuit Breaker Control, C37.11-
Sponsor: Electrical Standards Board

Supplement to American Standard Requirements, Terminology, and Test Code for Distribution, Power, and Regulating Transformers, C57.12d- (Partial revision and supplement to C57.12-1956)
Sponsor: Electrical Standards Board

96-Inch T-8 Instant Start Single-Pin Hot-Cathode Fluorescent Lamp, Dimensional and Electrical Characteristics of, C78.807- (Revision of C78.807-1951)

Spotlight and Floodlight Service Incandescent Lamps for 115, 120, and 125 Volts, C78.105- (Revision of C78.105-1949)

Method for the Designation of Mercury Lamps, C78.380-
Sponsor: Electrical Standards Board

GAS-BURNING APPLIANCES

In Standards Board

Addenda (Z21.1.1a) to American Standard Approval Requirements for Domestic Gas Ranges, Volume I, Free Standing Units, Z21.1.1-1956

Addenda (Z21.1.2a) to American Standard Approval Requirements for Domestic Gas Ranges, Volume II, Built-In Domestic Cooking Units, Z21.1.2-1956

Addenda (Z21.3a) to American Standard Approval Requirements for Hotel and Restaurant Gas Ranges and Unit Broilers, Z21.3-1956

Addenda (Z21.5a) to American Standard Approval Requirements for Domestic Gas Clothes Dryers, Z21.5-1956

Addenda (Z21.10.1a) to American Standard Approval Requirements for Gas Water Heaters, Volume I, Z21.10.1-1956

Addenda (Z21.10.2a) to American Standard Approval Requirements for Gas Water Heaters, Volume II, Side-Arm Type Water Heaters, Z21.10.2-1956

Addenda (Z21.11a) to American Standard Approval Requirements for Gas-Fired Room Heaters, Z21.11-1956

Addenda (Z21.13.1a) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume I, Steam and Hot Water Boilers, Z21.13.1-1956

Addenda (Z21.13.2a) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume II, Gravity and Forced Air Central Furnaces, Z21.13.2-1956

Addenda (Z21.13.3a) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume III, Gravity and Fan Type Floor Furnaces, Z21.13.3-1956

Addenda (Z21.13.4b) to American Standard Approval Requirements for Central Heating Gas Appliances, Volume IV, Gravity and Fan Type Vented Recessed Heaters, Z21.13.4-1955 and Addenda Z21.13.4a-1956

Gas Unit Heaters, Approval Requirements for, Z21.16- (Revision of Z21.16-1956)

Addenda (Z21.27b) to American Standard Approval Requirements for Hotel and Restaurant Deep Fat Fryers, Z21.27-1955 and Addenda Z21.27a-1956

Addenda (Z21.28a) to American Standard Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.28-1956

Addenda (Z21.31a) to American Standard Approval Requirements for Gas Counter Appliances, Z21.31-1956

Addenda (Z21.34b) to American Standard Approval Requirements for Gas-Fired Dust Furnaces, Z21.34-1955 and Addenda Z21.34a-1956

Installation of Gas Conversion Burners in Domestic Ranges, Listing Requirements for, Z21.38- and Addenda Z21.38a- (Revision of Z21.38-1953 and Z21.38a-1955)

Gas Conversion Burners for Domestic Ranges, Listing Requirements for, Z21.39- and Z21.39a- (Revision of Z21.39-1953 and Z21.39a-1955)
Sponsor: American Gas Association

Reaffirmation Being Considered

Gas Hose for Portable Gas Appliances, Listing Requirements on, Z21.2-1949, R1952

Hot Plates and Laundry Stoves, Approval Requirements for, Z21.9-1948 and Addenda Z21.9a-1949, R1952

Automatic Valves for Gas Appliances, Listing Requirements for, Z21.21-1952

Dual Oven Type Combination Gas Ranges, Approval Requirements for, Z21.37-1948, R1952
Sponsor: American Gas Association

HIGHWAY TRAFFIC

Project Being Considered

Method of Recording and Measuring Motor Transportation Accident Experience
Proposed Sponsors: National Safety Council; American Trucking Associations

MATERIALS AND TESTING

American Standards Published

Abrasion of Coarse Aggregate by Use of the Los Angeles Machine, Method of Test for, ASTM C 131-55; AASHO T96; ASA A37.7-1957 $0.30

Sieve Analysis of Mineral Filler, Method of Test for, ASTM D 546-55; AASHO T37-55; ASA A37.14-1957 $0.30

Unit Weight of Aggregate, Method of Test for, ASTM C 29-55; AASHO T19DARD; ASA A37.16-1957 $0.30

Making and Curing Concrete Compression and Flexure Test Specimens in the Field, Method of, ASTM C 31-55; AASHO T23; ASA A37.17-1957 $0.30

Compressive Strength of Molded Concrete Cylinders, Method of Test for, ASTM C 39-56T; AASHO T22; ASA A37.18-1957 $0.30

Organic Impurities in Sands for Concrete, Method of Test for, ASTM C 40-56T; ASA A37.19-1957 $0.30

Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate, Method of Test for, ASTM C 88-56T; AASHO T104; ASA A37.23-1957 $0.30

Lightweight Pieces in Aggregate, Method of Test for, ASTM C 123-53T; ASA A37.25-1957 $0.30

Sampling Fresh Concrete, Method of, ASTM C 172-54; AASHO T141; ASA A37.30-1957 $0.30

Ready-Mixed Concrete, Specifications for, ASTM C 94-55T; ASA A37.69-1957 $0.30

Air Content of Freshly Mixed Concrete by the Pressure Method, Method of Test for, ASTM C 231-56T; AASHO T152; ASA A37.70-1957 $0.30

American Standards Approved

Felted and Woven Fabrics Saturated with Bituminous Substances for Use in Waterproofing and Roofing, Methods of Sampling and Testing, ASTM D 146-56; ASA A109.10-1957 (Revision of ASTM D 146-47; ASA A109.10-1955)

Disintegration of Fireclay Refractories in an Atmosphere of Carbon Monoxide, Method of Test for, ASTM C 288-56; ASA A111.35-1957 (Revision of ASTM C 288-54; ASA A111.35-1955)

Chemical Analysis of White Pigments, Methods of, ASTM D 34-56T; ASA K15.1-1957 (Revision of ASTM D 34-51T; ASA K15.1-1956)
Sponsor: American Society for Testing Materials

MECHANICAL

American Standard Published

Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service, Specifications for, ASTM A 194-56T; ASA G38.1-1957 $0.30
Sponsor: American Society for Testing Materials

American Standards Approved

Transmission Roller Chains and Sprocket Teeth, B29.1-1957 (Revision of B29.1-1950)

Inverted Tooth (Silent) Chains and Sprocket Teeth, B29.2-1957 (Revision of B29.2-1950)

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

In Board of Review

Compressed Gas Cylinder Valve Outlet and Inlet Connections, B57.1-(Revision of B57.1-1953)
Sponsor: Compressed Gas Association

Five-Quart and One-Gallon Round Motor Oil Cans, Requirements for, B64.2-(Revision of B64.2-1954)

In Standards Board

Abrasive Discs and Plate Mounted Wheels, Machine Mounting Specifications for, B5.35-

Carbide Blanks and Cutting Tools, B5.36-
Sponsors: American Society of Mechanical Engineers; National Machine Tool Builders' Association; Society of Automotive Engineers; Metal Cutting Tool Institute; American Society of Tool Engineers

Withdrawal Being Considered

Physical Specimens of Surface Roughness and Lay, B46.2-1952
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

MINING

In Standards Board

Roof Bolting Materials in Coal Mines, Specifications for, M30-
Submitted by: American Mining Congress

Withdrawal Being Considered

Fire Fighting Equipment in Metal Mines, M17-1930
Sponsors: American Mining Congress; National Fire Protection Association

Mechanical Loading Underground in Metal Mining, Recommended Practice for, M19-1928
Sponsor: American Mining Congress

PHOTOGRAPHY

American Standards Published

2,4-Diaminophenol Hydrochloride, Specifications for, PH4.127-1956 $0.35

Para-Aminophenol Hydrochloride Specifications for, PH4.129-1956 $0.35

American Standards Approved

Paper Sheets for Photo-Reproduction of Documents, Dimensions of, PH5.2-1957

Practice for Storage of Microfilm, PH5.4-1957
Sponsor: American Library Association

In Board of Review

Chromium-Plated Surfaces for Ferrotyping, Specifications for, PH4.16- (Revision of Z38.8.18-1948)

Photographic Grade Potassium Iodide, Specifications for, PH4.201- (Revision of Z38.8.201-1948)

Photographic Grade Potassium Metabisulfite, Specifications for, PH4.277- (Revision of Z38.8.277-1948)

Projector Aperture for 35mm, Anamorphic, 2.35:1 Prints with Squeeze Ratio of 2:1, PH22.106-

Criteria for Classifying and Testing the Internal Synchronization of Front Shutters, PH3.18-

Medical X-ray Film Cassettes (Inch and Centimeter Sizes), Dimensions for, PH3.21- (Revision of PH3.21-1955)
Sponsor: Photographic Standards Board

In Standards Board

General-Purpose Photographic Exposure Meters (Photoelectric Type), PH2.12- (Revision of Z38.2.6-1948)
Sponsor: Photographic Standards Board

Reaffirmation Approved

Zero Point for Focusing Scales on 16mm and 8mm Motion-Picture Cameras, PH22.74-1951 R1957
Sponsor: Society of Motion Picture and Television Engineers

Withdrawal Being Considered

Theater Projection Screens, Dimensions for, Z22.29-1948

Mounting Frames for Theater Projection Screens, Dimensions for, Z22.78-1950
Sponsor: Society of Motion Picture and Television Engineers

PIPE AND FITTINGS

American Standard Published

Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Specifications for, ASTM A 182-56T; ASA G37.1-1957 $0.30
Sponsor: American Society for Testing Materials

In Standards Board

Face-to-Face and End-to-End Dimensions of Ferrous Valves, B16.10- (Revision of B16.10-1939)
Sponsors: American Society of Mechanical Engineers; Mechanical Contractors Association of America, Inc; Manufacturers Standardization Society of the Valve and Fittings Industry

SAFETY

Protective Lighting, Practice for, A85.1-1956 $0.50
Sponsor: Illuminating Engineering Society

TEXTILES

American Standards Published

Definitions of Terms Relating to Textile Materials, ASTM D 123-55; ASA L14.12-1957 $0.60

Fineness of Wool Tops, Method of Test for, ASTM D 472-56; ASA L14.29-1957 $0.30

Fiber Length of Wool Tops, Test for, ASTM D 519-55T; ASA L14.32-1957 $0.30

Fineness of Wool, Method of Test for, ASTM D 419-55T; ASA L14.26-1957 $0.30

WHAT'S NEW ON AMERICAN STANDARDS PROJECTS

Screw Threads, B1–

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Committee B1's Subcommittees 9 on Gaging and 11 on International Cooperation met together June 24 and 25 to discuss problems on unification of British, Canadian, and USA (ABC) screw thread standards, particularly in connection with gaging. Two visitors from Great Britain took part in the discussions. Stanley Harley, Coventry Gauge and Tool Co., Ltd, Coventry, England, already in the USA on a business trip, interrupted his schedule to attend the meeting. Sir Anthony Bowlby, of Guest, Keen and Nettlefolds, Inc, Birmingham, England, made the trip to the USA for the special purpose of attending the meeting.

During the two-day discussions, the subcommittees also heard a report of the meeting of ISO Technical Committee 1, Screw Threads, at Lisbon, Portugal, May 2, 3, and 4. Subcommittee 11 on International Cooperation of Sectional Committee 1 has responsibility for formulating the USA viewpoint on international proposals concerning screw threads for presentation to ISO/TC 1. The report of the international meeting was presented by P. V. Miller and Colonel Spencer B. Terry, USA representatives at Lisbon. Mr Miller is manager of the Small Tool Division, Taft-Peirce Manufacturing Company, Woonsocket, R. I. Colonel Terry is now retired. Before retirement he was with the Standardization Division, Supply and Logistics, Office of the Assistant Secretary of Defense.

ISO/TC 1 decided to recommend establishment of screw threads series in inch and metric measure, all having an identical triangular form of thread known universally as the ISO Basic Profile, Mr Miller and Colonel Terry reported. It was emphasized at the TC 1 meeting, however, they said, that it is important eventually to develop from these two parallel systems a single series of screw threads for commercial bolts and nuts that will eliminate present difficulties of servicing mechanical commodities outside the country of origin by improving interchangeability of bolts and nuts manufactured in various countries. This will be given special attention in future work of ISO/TC 1.

More than 70 specialists took part in the three-day plenary meeting, representing 22 countries, including Austria, Belgium, Canada, Czechoslovakia, France, Finland, Germany, Hungary, India, Italy, The Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States, and the USSR.

The Secretariat of this committee is handled by the Sveriges Standardiserings Kommission, the Swedish Member Body of ISO.

Code for Pressure Piping, B31–

Sponsor: American Society of Mechanical Engineers

Interpretations
Submitted by the Sponsor

From time to time certain actions of Sectional Committee B31 are published for the information of those interested. While these published actions do not constitute formal revision of the Code, they may be utilized in specifications, or otherwise, as representing the considered opinion of the committee.

Case No. 26 is published herewith as an interim action of Sectional Committee B31 on the Code for Pressure Piping that will not constitute a part of the Code until formal action has been taken by the American Society of Mechanical Engineers, as sponsor, and by the American Standards Association on approval of a revised edition.

Case No. 26

Inquiry: May Types 304 and 304L grades of stainless steel be used for piping in nuclear energy installations under the rules of Section 1 of the Code for Pressure Piping?

Reply: It is the opinion of the committee that Types 304 and 304L stainless steels may be used in nuclear energy installations for construction under Section 1, provided the following conditions are observed:

(1) The materials shall at least conform to one of the following specifications:

Pipe	A376
	A358
Welding Fittings	ASTM A403
Forgings	ASTM A182

(2) If welding is employed, all welds shall be fully radiographed.

(3) The design temperature shall not exceed 800 F.

(4) The allowable stress values for seamless materials shall be as follows:

Temperature F

—20 to 100 200 300 400 500 600 650 700 750 800

Type 18,750 16,650 15,000 13,650 12,500
304 11,600 11,200 10,800 10,400 10,000

Type 17,500 17,000 13,400 11,000 9,700
304L 9,000 8,750 8,500 8,300 8,100

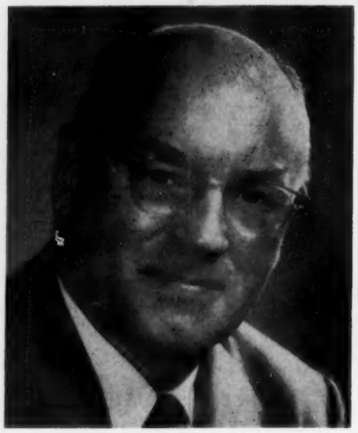
Note: These stress values do *not* include joint efficiency or quality factors.

(5) A joint factor of 0.95 shall be applied to welded construction that has been fully radiographed.

Textiles, L22–

Sponsor: National Retail Dry Goods Association

Egil E. Krogh, president of Sibley, Lindsay & Curr Company, Rochester, N.Y. and retailer with world-wide interests, has accepted the chairmanship of ASA's Sectional Committee L22. Recently the work of this important committee was expanded to cover performance standards for all textiles instead of being restricted to rayon, acetate, and combinations of rayon and acetate as had been the case earlier in the committee's history. Performance standards developed by Committee L22 are being used by a number of textile producers as the basis for testing the performance of their product and for attesting its performance to their customers.



Egil E. Krough

Mr Krogh succeeds Benjamin H. Namm, president and chairman of the Board, Namm-Loeser's, Inc, Brooklyn, N. Y.

Mr Krogh began his work in the retail field with Marshall Field & Company in 1923 and remained with the company for 30 years. During this time he organized the original Budget Floor, was a Divisional Vice-President and Assistant General Merchandise Manager, and went to Europe to study the possibilities of mass production imports. For four years he was a special lecturer on Retail Store Management and Distribution at the University of Chicago Downtown College. Mr Krogh received the Master's Degree in Business Administration from the University of Chicago after completing the Night Executive Program in 1945. The scholastic work he did for his Master's won him election to the honorary scholastic fraternity, Beta Gamma Sigma.

He also found time (1945-1947) to serve as a member of the Board of Trustees and Director of Purchasing of American Relief for his native Norway (he came to the USA when he was five years old.) For this work he was awarded the Freedom Medal by the King of Norway.

Mr Krogh has been president, general manager and general merchandise manager of Sibley, Lindsay & Curr Company since 1954.

He left Marshall Field & Company in 1950 to become first vice-president, assistant general manager, and general merchandise manager of Frederick & Nelson, Seattle, Washington. While working in Seattle he served as president of the Washington State Third International Trade Fair held annually in Seattle, and made a trip around the world for the Fair, visiting most of the countries in the Pacific and Far East. He is still a member of its Board of Trustees.

He has also been a member of several government teams to study means of improving trade with other countries. One of these four-man teams, sponsored by the United States Department of Commerce, toured industrial centers in Japan and took part in an International Trade Fair at Osaka. Another participated in a U.S. Government Trade Mission to India.

Mr Krogh is chairman of the Merchandising Division of the National Retail Dry Goods Association and member of the NRDGA Board of Directors. He is also a member of the NRDGA Committee Advisory to the International Division.

In accepting the L22 chairmanship, Mr Krogh said: "I am very happy to be associated with the fine work which L22 has done and continues to do. The preparation of performance standards for rayon and acetate fabrics was a magnificent job, and now the extension of that project to encompass all textiles is even more necessary and important.

"The ingenuity of man at work on nature's fibers and on his own and the blends of both puts an obvious burden on everyone involved in the sale of textiles. If we're to do our best by ourselves we must do our best by our customers. They must have the knowledge with which to handle properly the multi-fiber fabrics we constantly offer them. That knowledge can come only from a project like L22.

"The value of being a retailer is that one can bring one's own con-

sumer point of view to the solution of retailer problems. I don't think we should be satisfied with a tag attached to a garment giving instructions as to how it is best to be laundered and dry cleaned. The tag must be removed before the garment is worn. Tags get lost. People forget. Also, frequently the garment is laundered or dry cleaned by someone other than the person who bought it.

"It seems to me that we need to be thinking now of permanent labels, to be sewn into the garments. These would give the required laundering or dry cleaning information and other properties to observe for best care. Such a label would insure that the laundering information won't be forgotten. It would also result in fewer customer returns.

"My congratulations and thanks to the various committees at work on the L22 standards, and to the American Standards Association for their splendid cooperation. Everybody involved on L22 is doing us and the consumer a tremendous service."

Drafting Standards Manual, Y14 –

Sponsor: The American Society of Mechanical Engineers; American Society for Engineering Education.

Tentative drafts of Section 15, Electrical Diagrams, are now being distributed for criticism and comment, ASME announces. Copies may be obtained without charge from the Standards Department, American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N. Y. This proposed standard was developed by the task group of Subcommittee 15 responsible for electrical diagrams of the type used by the electronics and communications industries and includes only their types of diagrams. A second task group is preparing those used by the power and industrial control industries. A third, for logic diagrams of the type used in complex computer system designs, is working actively with a committee of the Institute of Radio Engineers in formulating the symbols required for logic diagrams.

Standards Outlook

by Leo B. Moore

Mr Moore is Associate Professor of Industrial Management, Massachusetts Institute of Technology, where he teaches a full-term course in industrial standardization.

Standards Fundamental

Eli Whitney's major contribution to American industry was the pioneering development of the principle of interchangeability. For this work and its effect on manufacturing techniques Whitney has received justly-earned accolades and has been dubbed the "father of standardization." There is a corollary to this principle that states that we should "make more products from fewer parts, operations, materials, and so forth." American industry currently seems to have forgotten this standards fundamental which in its use finds equal appeal for marketing and production activities. In these times of the squeeze on business profit, standards might well provide some help through this idea.

The saying "this company is a non-profit making organization—even though we hadn't planned it that way—that is the way it is turning out" has become too popular today to be considered much of a joke. A tight squeeze on business has resulted from rising costs of labor and materials and increased reluctance of consumers to pay more for substantially the same products. Attempts at increasing productivity and efficiency have not been sufficient to take up the slack. More effective means are needed and standards has among its many opportunities this possibility of "more from fewer."

An example of this "do more with less" principle is found in the automobile industry. Long ago Ford standardized on black paint and made over 15 million cars any color as long as it was black. Today you may have your choice of a wide range of colors and combinations. There is no question that this catering to the demands of the consumer has increased the cost of producing automobiles. However, in the *Ford Times* magazine of May 1957 the company notes that its "research people foresee the possibility of a photosensitive pigment paint which would enable a man to change the color of his car as easily as putting on a different suit. The car would come from the assembly plant as a neutral white and would be painted with a controlled electromagnetic radiation gun." It is not hard to see why this idea of a single paint with color variation induced by treatment would find favor with both the company's production and marketing people while at the same time cutting costs. Who knows, maybe we'll be able in the future to change the color of the car annually, or with the season, or even with milady's hat, and pay less for the privilege.

Such thinking can do more than provide a new look. It may put life into a business because it provides variation with standards advantages, and it does this in an unusually effective way. This unusual aspect could be the key for a special standards activity to head up a group designated to seek such opportunities. This would amount to a new kind of appeal from standards to the research and design group—not restriction, but creativity—of greatest importance to the company. It would still maintain marketing's flair for the competitive, enhance production's desire for stability, and help management meet the profit squeeze.

NOW AMERICAN STANDARD

SPECIFICATIONS FOR

Steel for Bridges and Buildings, ASTM A7-56T; SA-7 (ASME Boiler and Pressure Vessel Code); ASA G24.1-1957 50c

Covers carbon-steel shapes, plates, and bars of structural quality for use in construction of bridges and buildings and for general structural purposes.

Developed by Committee A-1 on Steel of the American Society for Testing Materials; Proprietary Standard of ASTM approved as American Standard

Ready-Mixed Concrete, ASTM C94-55T; ASA A37.69-1957 30c

Requirements for quality of materials and for proportions and quality of concrete of ready-mixed concrete (defined as portland cement concrete manufactured for delivery to a purchaser in a plastic and unhardened state)

METHOD OF SAMPLING

Method of Sampling Fresh Concrete, ASTM C172-54; AASHO T141; ASA A37.30-1957 30c

METHODS OF TEST FOR

Unit Weight of Aggregate, ASTM C29-55T; AASHO T19DARD; ASA A37.16-1957 30¢

Air Content of Freshly Mixed Concrete by the Pressure Method, ASTM C231-56T; AASHO T152; ASA A37.70-1957 30¢

Organic Impurities in Sands for Concrete, ASTM C40-56T; ASA A37.19-1957 30¢

Abrasion of Coarse Aggregate by Use of the Los Angeles Machine, ASTM C131-55; AASHO T96; ASA A37.7-1957 30¢

Compressive Strength of Molded Concrete Cylinders, ASTM C39-56T; AASHO T22; ASA A37.18-1957 30¢

Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate, ASTM C88-56T; AASHO T104; ASA A37.23-1957 30¢

This method furnishes information helpful in judging soundness of aggregates subject to weathering action

These A37 standards were developed by Committee C9 on Concrete and Concrete Aggregates and by Committee D4 on Road and Paving Materials of the American Society for Testing Materials. They were recommended by ASA Sectional Committee A37 on Road and Paving Materials and approved by ASA as American Standard. **Published by the American Society for Testing Materials, 1916 Race Street, Philadelphia, Pa.**

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